Soil Survey Of

MOBILE COUNTY, ALABAMA

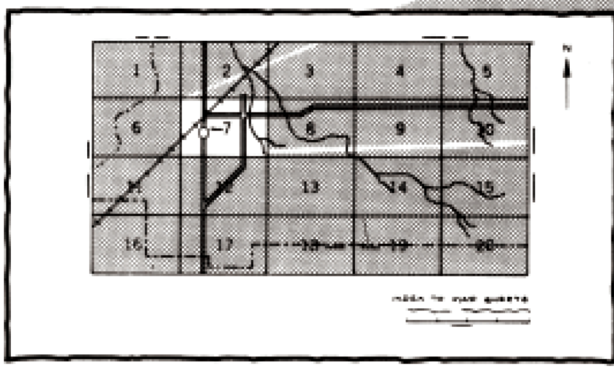
United States Department of Agriculture
Soil Conservation Service

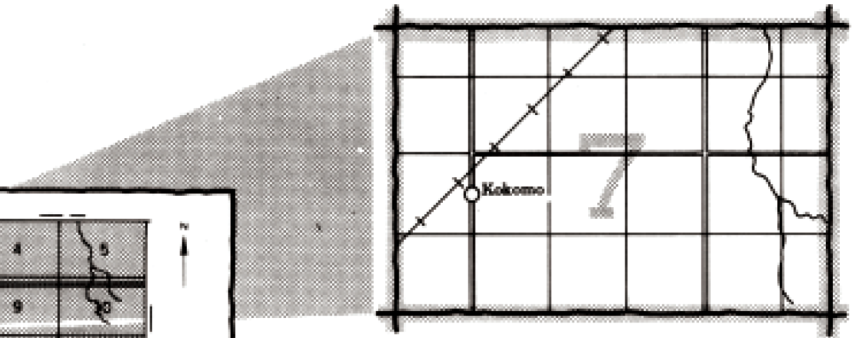
in cooperation with

Alabama Agricultural Experiment Station
and Alabama Department of Agriculture and Industries

HOW TO USE

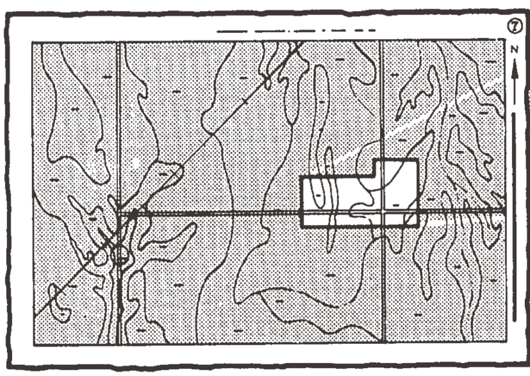
1. Locate your area of interest on the "Index to Map Sheets"

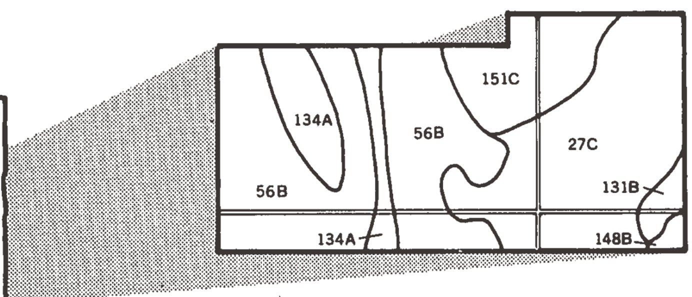




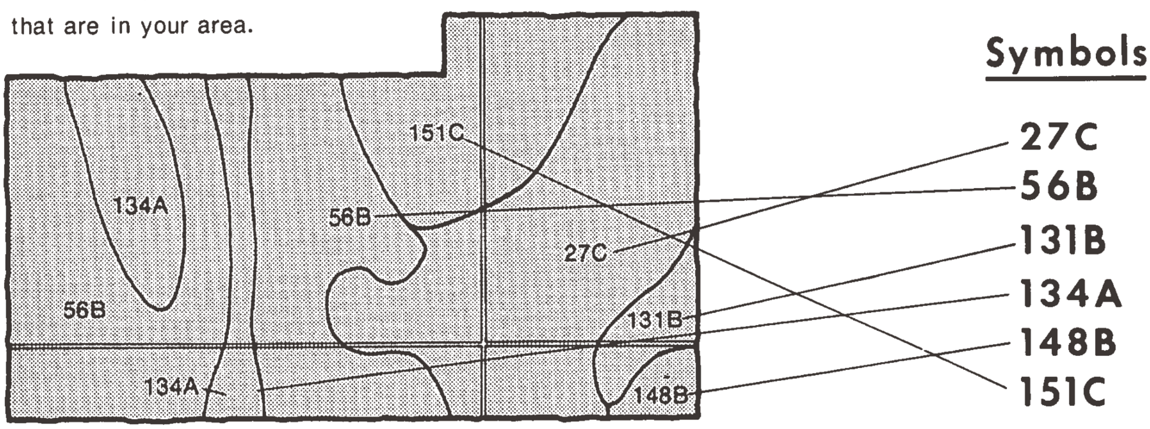
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



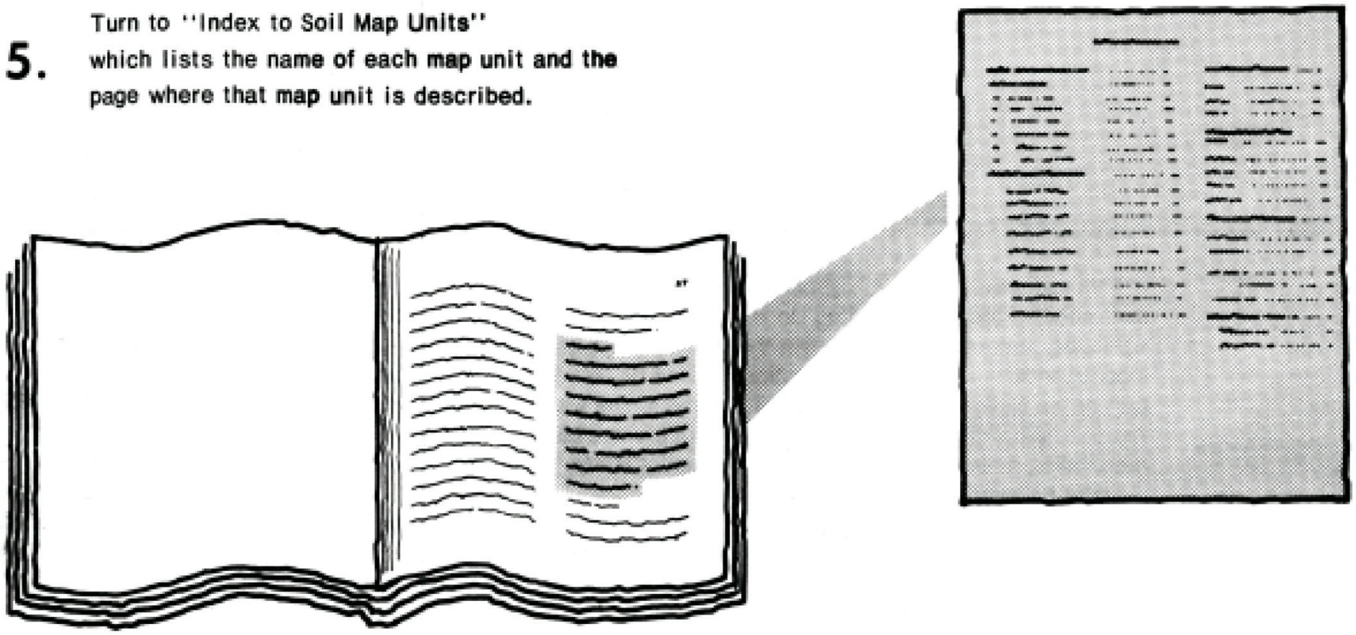


4. List the map unit symbols that are in your area.

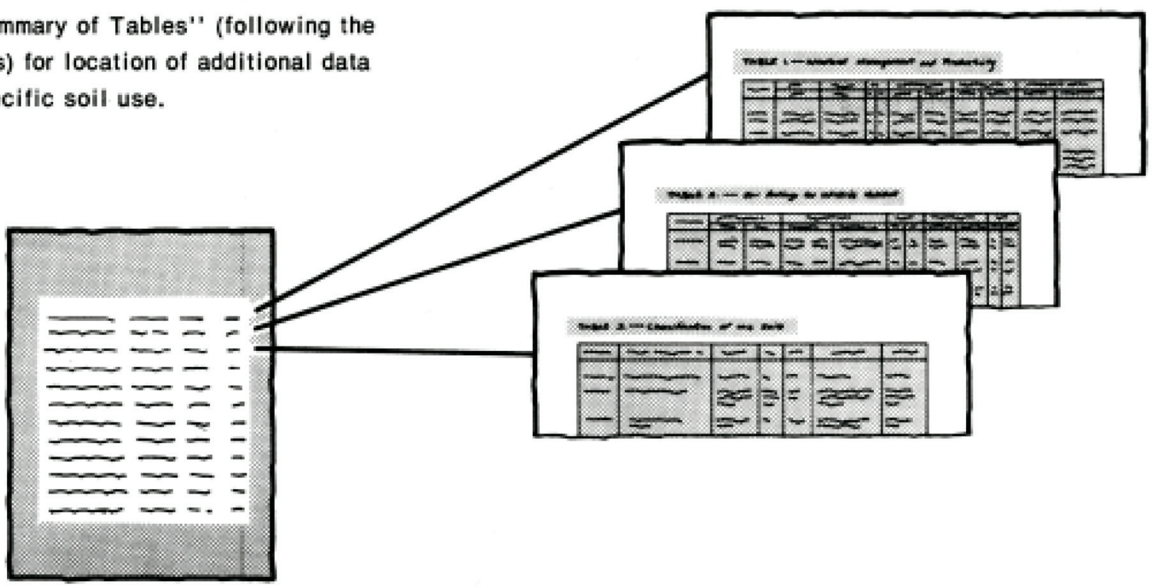


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1969-1977. Soil names and descriptions were approved in 1978. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1978. This survey was made cooperatively by the Soil Conservation Service, the Alabama Agricultural Experiment Station, and the Alabama Department of Agriculture and Industries. The Mobile County Commission and the City of Mobile contributed financially to the survey. It is part of the technical assistance furnished to the Mobile County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps can cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Cover: Farm pond in pastureland on Bama sandy loam, 0 to 2 percent slopes, reflects the good potential of this soil for pasture use as well as cultivated crops.

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Issued May 1980

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Foreword

The Soil Survey of Mobile County, Alabama, contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

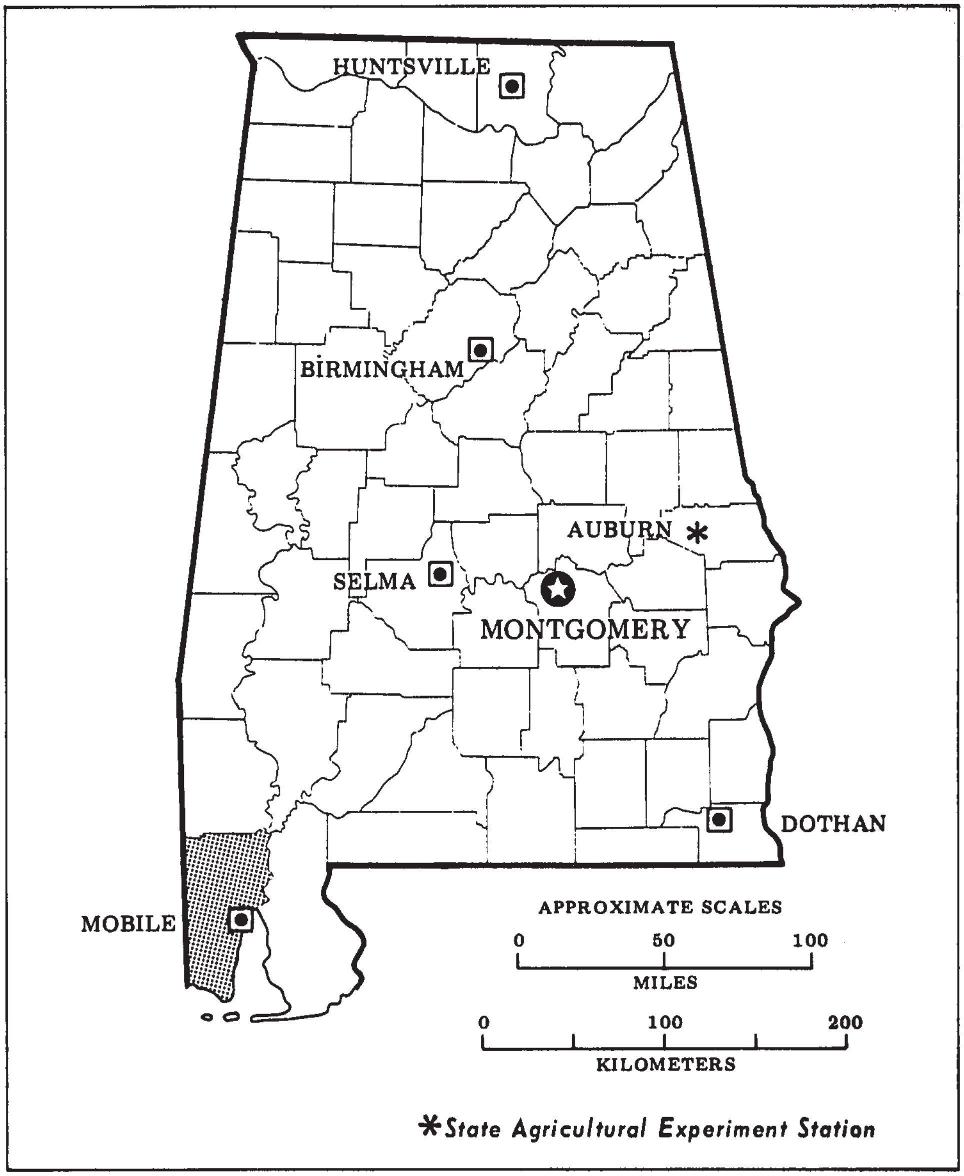
This soil survey has been prepared for many different users. Farmers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the location of each kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This soil survey can be useful in the conservation, development, and productive use of soil, water, and other resources.

W.B. Lingle
State Conservationist
Soil Conservation Service



Location of Mobile County in Alabama.

SOIL SURVEY OF MOBILE COUNTY, ALABAMA

By Glenn L. Hickman and Charles Owens, Soil Conservation Service

Fieldwork by M. Grant Mattox, Charles Owens, Eugene H. McBride, and Delarie Parmer, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service, in cooperation with the Alabama Agricultural Experiment Station and the Alabama Department of Agriculture and Industries

MOBILE COUNTY is in the southwestern corner of Alabama. The city of Mobile is the county seat. The county has a total area of 793,472 acres, or about 1,239.8 square miles.

The county is in two major land resource areas—the Southern Coastal Plain Resource area, which includes the northern, western, and central parts of the county, and the Gulf Coast Flatwoods Resource area, which includes a narrow strip along the eastern and southern boundaries.

The Southern Coastal Plain area has two general landscapes. The northern part of the area is mainly low hills with narrow to broad, gently sloping ridgetops, moderately steep side slopes, and many narrow, well defined drainageways. The southern part is mostly a series of level to gently sloping, broad, low lying ridges that have steeper slopes along drainageways.

The Gulf Coast Flatwoods area is mainly nearly level, low stream terraces and swamps along the rivers on the east side of the county and broad flats with a few fairly large depressions and a few drainageways on the south side of the county. Petit Bois, Dauphin, and other small islands, 5 to 12 miles from the mainland, are included in the county. These islands are part of the barrier reef that encloses Mississippi Sound. Elevation in the county ranges from sea level along the coast to about 340 feet above sea level near Citronelle in the northern part of the county.

Drainage in the county in the western third is by the Escatawpa River and Big Creek, which flow in a southwesterly direction into the State of Mississippi. The eastern part of the county is drained mostly by small streams that are part of the Mobile, Tensaw, and Middle Rivers drainage system, which flows into Mobile Bay. Drainage in the southern part of the county is by the Dog River, the Fowl River, and small streams that flow into Mobile Bay and into Mississippi Sound.

General nature of the county

Farming

The acreage used for cultivated crops has been steadily increasing during the past decade, and the acreage for improved pastures has slightly decreased. This shift in the acreage to major cultivated crops can be attributed to expanded local and export markets and to the increase in handling and marketing facilities such as the Alabama State Docks. Most of the cultivated crop acreage is on uplands in the central and southwestern parts of the county.

About 80,000 acres, or 10 percent of the county, is used for cultivated crops, and about 35,000 acres, or 5 percent of the county, is used for pasture. Major crops are soybeans, corn, and wheat. Watermelons, Irish potatoes, sweet corn, cabbage, and snap beans constitute the major specialty crops. Other specialty crops include orchard crops and grapes. There are several pecan orchards throughout the county (fig. 1). Beef and dairy cattle and hogs are the main livestock grown.

Natural resources

The Mobile County Soil Conservation District was granted a certificate of incorporation in December 1957. Before, it was a part of the Mobile River Soil Conservation District.

Soil is one of the most important natural resources in the county. Cultivated crops produced on farms, pastures for livestock grazing, and timber products are all marketable products that are derived from the soil.

Water is adequate for domestic, industrial, municipal, livestock, and recreational uses in all areas of the county. The Mobile River, Big Creek Lake, and several other streams provide ample surface water for these uses. In addition, wells, springs, and farm ponds are common throughout the county.

Three major oil fields in the county produce both oil and gas. The Citronelle oil field is in the northern part of

Figure 1.—Pecan trees provide a cash crop on Benndale sandy loam, 0 to 2 percent slopes. White clover and bahiagrass are used for ground cover.

the county, and Hatters Pond and Chunchula fields are in the central part of the county.

Throughout the county are many large deposits of sand. Some of these are mined for commercial use.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In Mobile County the summers are hot and humid, but the coast is frequently cooled by sea breezes. Winters are warm, only occasionally interrupted by cool air from the north. Rains occur throughout the year, and precipitation is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at Mobile for the period 1951 to 1975. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 53 degrees F, and the average daily minimum temperature is 43 degrees. The lowest temperature on record, which occurred at Mobile on January 1, 1962, is 7 degrees. In summer the average temperature is 81 degrees, and the average daily maximum temperature is 91 degrees. The highest recorded temperature, which occurred on July 25, 1952, is 104 degrees.

Growing degree days, shown in table 1, are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 36 inches, or 56 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 29 inches. The heaviest 1-day rainfall during the period of record was 13.36 inches at Mobile on April 13, 1955. Thunderstorms occur on about 80 days each year, and most occur in summer. Snowfall is rare.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The percentage of possible sunshine is 60 in summer and 50 in winter. The prevailing wind is from the north. Average windspeed is highest, 11 miles per hour, in March.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

After a guide for classifying and naming the soils was worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are discussed in the sections "General soil map for broad land use planning" and "Soil maps for detailed planning."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observa-

tions of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it is readily available to different groups of users, among them farmers, managers of woodland, engineers, planners, developers and builders, homebuyers, and those seeking recreation.

General soil map for broad land use planning

The general soil map at the back of this publication shows, in color, map units that have a distinct pattern of soils and of relief and drainage. Each map unit is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are, for the most part, suited to certain kinds of farming or to other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, drainage, or other characteristics that affect their management.

The soils in the survey area vary widely in their potential for major land uses. Table 4 shows the extent of the map units shown on the general soil map and gives general ratings of the potential of each, in relation to the other map units, for major land uses. Soil properties that pose limitations to the use are indicated. The ratings of soil potential are based on the assumption that practices in common use in the survey area are being used to overcome soil limitations. These ratings reflect the ease of overcoming the soil limitations and the probability of soil problems persisting after such practices are used.

Each map unit is rated for *cultivated farm crops, specialty crops, woodland, urban uses,* and *recreation areas*. Cultivated farm crops are those grown extensively by farmers in the survey area. Specialty crops are those that generally require intensive management. Woodland refers to land that is producing either trees native to the area or introduced species. Urban uses include residential, commercial, and industrial developments. Intensive recreation areas include campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreation areas include those used for nature study and as wilderness. A description of each of the units appearing on the general soil map follows.

1. Troup-Heidel-Bama

Nearly level to undulating, well drained soils that have loamy subsoils; formed in loamy marine sediments on uplands

Most areas of this map unit are in the southwestern part of the county. These areas have broad, slightly convex ridgetops with steeper side slopes adjacent to natural drainageways.

This unit makes up about 27 percent of the county. It is about 34 percent Troup soils, 25 percent Heidel soils, 12 percent Bama soils, and 29 percent minor soils.

Troup soils are on side slopes and the more sloping ridgetops. Heidel and Bama soils are on more level ridgetops. Troup soils have thick loamy sand surface layers, and Heidel and Bama soils have sandy loam surface layers.

Minor soils in this unit include the moderately well drained Harleston soils and the moderately well drained to somewhat poorly drained Pactolus soils in upland depressions and the poorly drained Bibb soils and very poorly drained Johnston soils in drainageways.

This unit is used mainly for cultivated crops and pasture (fig. 2). Much of the acreage has been cleared except for the more poorly drained areas. Erosion and the low available water capacity of Troup soils are the main limitations for farming.

This unit has good to fair potential for cultivated crops and pastures. Minimum tillage, contour farming, and terracing are needed in the sloping areas. Troup soils are somewhat limited by their low available water capacity. Potential for urban and woodland uses is good. Potential for openland and woodland wildlife habitat is good to fair.

2. Troup-Benndale-Smithton

Nearly level to hilly, well and poorly drained soils with loamy subsoils; formed in loamy marine and fluvial sediments on uplands

This map unit is in the northern half of the county. The landscape is mainly a series of low hills with long, narrow ridgetops and long, convex side slopes. The areas are dissected by narrow drainageways.

This unit makes up about 31 percent of the county. It is about 43 percent Troup soils, 14 percent Benndale

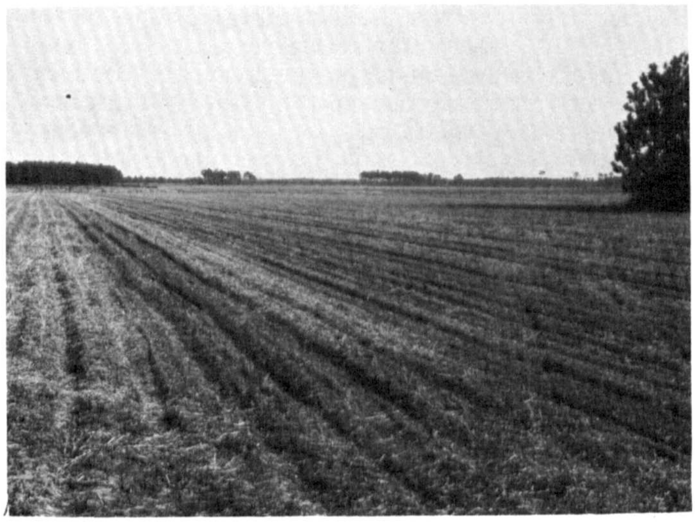


Figure 2.—Cultivated crops and pasture are the main use of the Troup-Heidel-Bama unit of the general soil map.

soils, 6 percent Smithton soils, and 37 percent minor soils.

Troup soils are mostly on narrow ridgetops and steeper side slopes. Benndale soils are mostly on lower elevations on broader ridgetops and more gentle side slopes. The poorly drained Smithton soils are along drainageways. Troup soils have thick sandy surface layers, and Benndale and Smithton soils have loamy surface layers.

Minor soils in this unit include the well drained to moderately well drained Poarch soils and the well drained Shubuta soils on uplands and the poorly drained Bibb soils and the very poorly drained Dorovan and Johnston soils in drainageways.

Potential for woodland is good, and this is the main use (fig. 3). Some areas have been cleared for cultivated crops and pasture. This unit has fair to poor potential for cultivated crops and fair potential for pasture. Slope, the droughty nature of the Troup soils, and the wetness of Smithton soils are the main limitations for cultivated crops.

This unit has fair to poor potential for most urban uses. Slope and wetness are the main limitations; however, slope limitations can be corrected. Potential for openland and woodland wildlife habitat is good to fair.

3. Dorovan-Johnston-Levy

Nearly level, very poorly drained, mucky and loamy soils; formed in thick deposits of organic residues and alluvial sediments on bottom lands

This map unit is in the northeastern part of county adjacent to the Mobile and Tensaw Rivers and in the southern part of the county along Grand Bay Swamp. These are level to slightly depressional swamp areas with many meandering streams and sloughs that are frequently flooded. The water table is above or near the surface most of the year.

This unit makes up about 9 percent of the county. It is about 48 percent Dorovan soils, 12 percent Johnston soils, 12 percent Levy soils, and 28 percent minor soils.

The organic Dorovan soils are on level to slightly depressional areas between the Mobile and Tensaw Rivers and between the Mobile River and the soils on terraces to the west. Johnston soils have thick mucky loam surface layers and underlying sandy layers. They are on slightly higher positions on flat areas adjacent to uplands. Levy soils are loamy mineral soils with clayey subsoils. They are above the Dorovan soils adjacent to natural levees that parallel the stream channels.

The minor soils in this unit are the somewhat poorly drained Escambia soils, the somewhat poorly drained to moderately well drained Pactolus soils, and the moderately well drained Harleston soils on uplands and the poorly drained Bibb soils and the very poorly drained Pamlico soils along streams.

This unit is used mainly for woodland, and the potential is fair for this use. The use of equipment is severely limited, and the seedling mortality rate is severe because of wetness and flooding.

Potential is poor for cultivated crops, pasture, and urban uses. Flooding, the high water table, low strength, and the hazard of subsidence are severe limitations for

Figure 3.—Woodland is the main use of the Troup-Benndale-Smithton unit of the general soil map. Area shown has been clear-cut and replanted to loblolly pine.

urban development. This unit has good potential for development of shallow water areas and habitat for wetland wildlife. This unit has fair to good potential for nature study trails, but wetness is a limitation.

4. Izagora-Bethera-Suffolk

Nearly level to undulating, well to poorly drained soils that have loamy and clayey subsoils; formed in loamy and clayey marine and alluvial sediments on terraces

Areas of this map unit are on stream terraces in the northeastern and northwestern parts of the county adjacent to the Mobile River swamps and along the Escatawpa River.

This unit makes up about 9 percent of the county. It is about 34 percent Izagora soils, 9 percent Bethera soils, 9 percent Suffolk soils, and 48 percent minor soils.

Izagora soils are on broad flats and gently sloping side slopes, and Bethera soils are in narrow to broad depressions and narrow drainageways. Suffolk soils are on the more sloping areas adjacent to natural drainageways. Izagora and Suffolk soils have loamy subsoils, and Bethera soils have clayey subsoils.

Minor soils in this unit include the somewhat excessively drained Alaga soils and the moderately well drained Annemaine and Harleston soils. The poorly drained and very poorly drained Bibb, Dorovan, Johnston, Pamlico, and Smithton soils are also included along drainageways and in depressions.

This unit is used mainly for woodland, and the potential is good for this use. The potential is good to fair for cultivated crops and good for pasture. A few areas have been cleared for farming. The main limitation is the late winter and early spring wetness of Izagora and Bethera soils, which may delay tillage operations.

This unit has poor potential for residential and other urban uses. Wetness, slow permeability, and the hazard of flooding are severe limitations for urban development of areas of Izagora and Bethera soils. Potential for development of habitat for openland and woodland wildlife is good on the Izagora and Suffolk soils.

5. Notcher-Saucier-Malbis

Nearly level to gently undulating, moderately well drained soils that have loamy subsoils with plinthite; formed in loamy and clayey marine sediments on uplands

This map unit is in the southern part of the county. These are broad, mostly flat areas with gentle, short side slopes into natural drainageways.

This unit makes up about 5 percent of the county. It is about 37 percent Notcher soils, 23 percent Saucier soils, 20 percent Malbis soils, and 20 percent minor soils.

Notcher and Malbis soils are on the higher elevations in the landscape on broad, slightly convex ridges. Notcher soils are also on concave slopes around the heads of drainageways and on side slopes. Saucier soils are mainly on broad flats at slightly lower elevations. All of the soils have sandy loam surface layers.

Minor soils in this unit include the well drained Bama and Heidel soils on uplands and the poorly drained Bibb, Grady, and Smithton soils in depressions and drainageways.

Most of the acreage has been cleared for cultivated crops and pasture. The unit has good potential for these uses. Erosion on the more sloping areas is the main limitation.

The potential for residential and urban development is good to fair. Wetness and the moderately slow to slow permeability of the layers with plinthite are the main limitations. The potential is good for openland and woodland wildlife habitat.

6. Bayou-Escambia-Harleston

Nearly level to gently undulating, poorly to moderately well drained soils with loamy subsoils; formed in marine and fluvial sediments on uplands and terraces

This map unit is in the southeastern part of the county extending from the city of Mobile to Bayou LaBatre. These are large, flat areas that have few drainage outlets.

This unit makes up about 6 percent of the county. It is about 31 percent Bayou soils, 25 percent Escambia soils, 14 percent Harleston soils, and 30 percent minor soils.

Bayou soils are on broad flats adjacent to poorly defined drainageways. Escambia and Harleston soils are on slightly higher, gently undulating ridges.

Minor soils in this unit are the well drained and moderately well drained Benndale, Malbis, and Poarch soils on knolls and low ridges and the very poorly drained Dorovan, Johnston, and Lafitte soils mainly in the drainageways and in areas adjacent to Mobile Bay.

This unit is used mainly for woodland and urban uses. The potential for woodland is fair, and the potential for urban development is poor. Wetness is the main limitation for urban uses.

This unit has fair to poor potential for cultivated crops and pastures, but a few areas have been cleared for farming. Wetness is the main limitation, and this is difficult to correct because adequate drainage outlets are difficult to find.

Escambia and Harleston soils in this unit have good potential as habitat for openland and woodland wildlife. The Bayou soils have fair potential as habitat for openland wildlife and poor potential as habitat for woodland wildlife.

7. Urban land-Smithton-Benndale

Nearly level to gently rolling Urban land areas that are intermingled with poorly drained and well drained soils that have loamy subsoils; formed in loamy marine and fluvial sediments on uplands

This map unit is within the Mobile area. In areas that have not been altered by development, the landscape is made up of broad flats surrounded by moderately sloping ridges.

This unit makes up about 5 percent of the county. It is about 37 percent Urban land, 14 percent Smithton soils, 8 percent Benndale soils, and 41 percent minor soils.

Urban land in this unit includes sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. The poorly drained Smithton soils are on broad flats and along streams. The well drained Benndale soils are on ridgetops and upper side slopes.

Minor soils in this unit include the well drained Heidel and Troup soils on ridgetops and side slopes and the very poorly drained Dorovan, Johnston, Lafitte, and Pamlico soils in drainageways. Also included are areas that have been significantly disturbed by cutting, filling, or grading.

This unit has poor potential for most uses other than continued urban development and associated uses. The remaining open areas are relatively small and generally have been committed to urban development. The potential for urban use is fair. The main limitation is wetness of the Smithton soils. Potential is fair for intensive recreational areas.

8. Shubuta-Troup-Benndale

Gently undulating to rolling, well drained soils that have clayey and loamy subsoils; formed in clayey and loamy marine sediments on uplands

This map unit is in the north-central and western parts of the county. These areas generally have narrow winding ridgetops and complex side slopes that are dissected by many narrow drainageways.

This unit makes up about 5 percent of the county. It is about 33 percent Shubuta soils, 21 percent Troup soils, 20 percent Benndale soils, and 26 percent minor soils.

Shubuta and Benndale soils are mostly on ridgetops and upper side slopes. Troup soils are mostly on lower side slopes and have thick loamy sand surface layers. Shubuta and Benndale soils have loamy surface layers.

Minor soils in this unit include the somewhat poorly drained Susquehanna soils and the moderately well drained and well drained Harleston and Heidel soils on low ridges and the poorly drained and very poorly drained Bibb, Dorovan, and Johnston soils in drainageways.

Potential for woodland is good, and this is the main use. Some small areas have been cleared for cultivated crops and pasture. This unit has fair potential for cultivated crops and pastures. The potential is limited by the short choppy nature of the slopes and by the low available water capacity of the Troup soils.

This unit has good to fair potential for urban development. The moderately slow permeability and low strength of the Shubuta soils are severe limitations. Troup and Benndale soils have good potential for most urban uses. The potential for both openland and woodland wildlife habitat is good. Potential is good for extensive recreational areas.

9. Axis-Lafitte

Nearly level, very poorly drained, loamy mineral soils and organic soils; formed in loamy marine sediments and thick herbaceous plants remains on coastal marshes

This unit is on the eastern side of the county and along the coastline in the extreme southern part of the county. Areas typically are marshes that are slightly above sea level. They are covered with salt water-tolerant grasses and are flooded by brackish water and sea water during high tides.

This unit makes up about 3 percent of the county. It is about 44 percent Axis soils, 38 percent Lafitte soils, and 18 percent minor soils.

Axis soils are generally on tidal flats and are loamy mineral soils. The organic Lafitte soils are mainly at the mouths of streams and rivers.

Minor soils in this unit include the sandy Duckston, Fripp, Osier, and Pactolus soils on offshore islands and along the coastline. These minor soils are used mainly for recreation associated with nearby coastal beaches.

This unit is used mainly as habitat for wetland wildlife, and nearly all the area is in its natural condition. Potential for this use is good. Potential for extensive recreational areas is fair. The potential for most other uses is poor because of wetness and flooding from tides.

Broad land use considerations

Land use decisions dealing with urban development are an important issue in the survey area. Approximately 120,000 acres, or 15 percent of the county, is in urban or built-up areas. Additional lands are being developed each year for both residential and industrial uses. The Mobile area and areas adjoining the rivers and coast are being rapidly developed. Soils and their suitability for different uses must be considered in the development of an area. The general soil map is a helpful source of information for general planning of future urban growth, but it should not be used to select sites for specific urban structures. In general, the soils in the county that have good potential for agricultural use also have good

potential for urban development. Data about specific soils in this survey can be helpful in planning and making future land use decisions.

Soils in two large areas of the county have unfavorable characteristics for most urban development. These are the Dorovan-Johnston-Levy unit adjacent to the Mobile and Tensaw Rivers and the Axis-Lafitte unit along the bays and marshy coast. These units are frequently flooded, often ponded, and have large areas of organic soils in which subsidence would be a severe problem if the soils were drained. Other units have large areas of soils that have poor potential for urban development. These include large parts of the Izagora-Bethera-Suffolk unit on low terraces where flooding and wetness are severe limitations for urban development and the Bayou-Escambia-Harleston unit on low uplands where wetness is a moderate to severe limitation for urban development.

Some large areas of soils in the county can be developed for urban uses at lower cost than the soils named above. These include the Troup, Heidel, Bama, and Benndale soils in the Troup-Heidel-Bama and Troup-Benndale-Smithton units; the Benndale soils in the Urban land-Smithton-Benndale unit; and the more gently sloping parts of the Troup and Benndale soils in the Shubuta-Troup-Benndale unit. Some of the soils in these units are also good farmland; this use should not be overlooked when considering urban development.

Some areas in the county have soils with fair to poor potential for urban development but good potential for farming. These include the Notcher-Saucier-Malbis and Izagora-Bethera-Suffolk units. Wetness is the dominant limitation for urban development of these soils.

Areas that have good potential for growing pecans, Irish potatoes, vegetables, and other specialty crops include some of the soils in the Troup-Heidel-Bama and Notcher-Saucier-Malbis units. Most soils within these units have favorable surface textures and good soil-moisture relationships and respond well to fertilizer and management practices.

Most of the soils in the county have good or fair potential for woodland, the main exception being those in the Axis-Lafitte unit. These soils are frequently flooded, and some areas are inundated by tide water. Trees grow rapidly on most soils (except those in the Axis-Lafitte unit), and the woodlands are dominantly commercially valuable species.

Many soils in the county have good potential as park sites and recreational areas. These include the Heidel and Bama soils in the Troup-Heidel-Bama unit and the soils of the Notcher-Saucier-Malbis unit. The rolling topography and variation in natural vegetation in the Troup-Benndale-Smithton unit and the Shubuta-Troup-Benndale unit enhance the potential of those units for nature trails. Natural beaches along the coast and islands and the undrained swamps of the Dorovan-Johnston-Levy unit and the marsh areas of the Axis-Lafitte unit have good potential for nature study areas and provide habitat for many species of wetland wildlife. However, access to these areas is restricted during wet seasons.

Soil maps for detailed planning

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for each map unit, or soil, is given in the section "Use and management of the soils."

Preceding the name of each map unit is the number that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated, and the management concerns and practices needed are discussed.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils that have a profile that is almost alike make up a *soil series*. Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. The Axis series, for example, was named for the town of Axis in Mobile County.

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Bama sandy loam, 0 to 2 percent slopes, is one of several phases within the Bama series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes and soil associations.

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small that they cannot be shown separately on the soil map. Each area includes some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Pamlico-Bibb complex, 0 to 1 percent slopes, is an example.

A *soil association* is made up of soils that are geographically associated and are shown as one unit on the map because it is not practical to separate them. A soil association has considerable regularity in geographic pattern and in the kinds of soil that are a part of it. The extent of the soils can differ appreciably from one delineation to another; nevertheless, interpretations can be made for use and management of the soils. Troup-Benndale association, rolling, is an example.

Most map units include small, scattered areas of soils other than those that appear in the name of the map unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the map unit. These soils are described in the description of each map unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

Most mapped areas include places that have little or no soil material and support little or no vegetation. Such places are called *miscellaneous areas*; they are delineated on the soil map and given descriptive names. Pits is an example. Some of these areas are too small to be delineated and are identified by a special symbol on the soil map.

The acreage and proportionate extent of each map unit are given in table 5, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary.

A description of each map unit on the detailed soil maps in the back of this publication follows.

2—Alaga-Harleston association, undulating. This map unit consists of somewhat excessively drained and moderately well drained soils in a regular and repeating pattern on broad flat terraces and low uplands of the Coastal Plain. The sandy Alaga soils are in higher positions than the loamy Harleston soils. Slopes range from 0 to 5 percent. Mapped areas are irregular in shape and range from 200 to 1,000 acres. Individual areas of each soil range from 10 to 200 acres.

Alaga soils and similar soils make up about 52 percent of the map unit. Typically, the surface layer is very dark grayish brown loamy sand about 5 inches thick. The underlying material to a depth of about 65 inches is brown, yellowish brown, and brownish yellow loamy sand. Below this, to 80 inches, is very pale brown sand that has strata of strong brown loamy sand.

Alaga soils are rapidly permeable and have low available water capacity. They are very low in natural fertility and organic matter content. Reaction is medium acid to very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and the soils can be cultivated over a wide moisture range. The root zone is deep and easily penetrated by roots.

Harleston soils and similar soils make up about 32 percent of the map unit. Typically, the surface layer is very dark gray sandy loam about 3 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of about 10 inches. The upper part of the subsoil is light yellowish brown sandy loam to 22 inches and brownish yellow loam to 35 inches. It has mottles in shades of gray and yellow. The lower part is mottled gray, yellow, red, and brown loam and sandy clay loam to a depth of 72 inches.

Harleston soils are moderately permeable and have moderate available water capacity. They are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. A seasonal high water table is about 2 to 3 feet below the surface in winter and early spring. Some areas are subject to very brief flooding during periods of unusually high rainfall. Tilth is good, and these soils can be tilled over a wide moisture range. The root zone is deep and easily penetrated by roots.

Minor soils make up about 16 percent of the map unit. They include small areas of the well drained Benndale soils, moderately well drained Izagora soils, somewhat poorly drained Escambia soils, and poorly drained Bethera and Smithton soils.

Potential of these Alaga and Harleston soils is fair for cultivated crops and good for hay and pasture. The low available water capacity of Alaga soils and the seasonal wetness of Harleston soils are the major management concerns.

Most of the acreage is woodland. Potential is good for slash, loblolly, and longleaf pines. The use of equipment is moderately restricted by the sandy texture of the Alaga soils and by the seasonal wetness of Harleston soils. The seedling mortality rate is moderate for Alaga soils because of droughtiness.

These soils have fair potential for most urban uses. Alaga soils have slight limitations for most building site developments and septic tank absorption fields. The seasonal high water table in Harleston soils is a severe limitation for most urban uses. Also, some areas of Harleston soils are subject to very brief flooding during periods of unusually high rainfall.

Alaga soils are in capability subclass IIIs and in woodland group 3s. Harleston soils are in capability subclass IIw and in woodland group 2w.

3—Axis mucky sandy clay loam, 0 to 1 percent slopes. This very poorly drained, nearly level soil is on tidal flats that extend from the coastline to the Gulf Coast Flatwoods. The landscape is mostly flat with narrow bayous and a few manmade channels. Individual areas are 5 to 1,500 acres.

Typically, the surface layer is very dark grayish brown mucky sandy clay loam about 7 inches thick. The sub-

surface layer is very dark gray sandy loam to a depth of about 12 inches. The underlying material to about 20 inches is dark gray sandy loam that has light brownish gray mottles. Below this, to 71 inches, is light gray sandy loam that has gray, olive, and brown mottles. The lower part of the underlying material contains pockets of finer textured materials.

This soil has moderate permeability and available water capacity. It is low in natural fertility, and the organic matter content is very high in the surface layer. Reaction is slightly acid to moderately alkaline throughout when the soil is moist and medium acid to extremely acid when the soil has been air dried. Because this soil is flooded daily by tide water, it is moderately saline.

Included with this soil in mapping are a few small areas of soils that are severely salt affected. These areas are 1/2 acre to 3 acres and are known locally as salt flats. There are a few areas of very poorly drained, finer textured soils included in mapping in the vicinity of Cedar Point and Alabama Port. Also included are a few areas of deep organic soils. These are mostly west of the town of Grand Bay. Included soils make up 18 percent of the map unit.

Most of the acreage of this Axis soil is used for wetland wildlife habitat. Native vegetation includes such salt water-tolerant grasses as needlegrass rush, bushy sea oxeye, and seashore saltgrass.

This soil has poor potential for cultivated crops, pasture, woodland, and urban uses because of wetness and daily flooding from tides. These limitations are difficult to overcome.

This Axis soil is in capability subclass VIIw; it is not assigned to a woodland group.

4—Bama sandy loam, 0 to 2 percent slopes. This well drained, nearly level soil is on ridgetops and broad flats on Coastal Plain uplands. Slopes are smooth and convex. Individual areas are mostly 40 to 300 acres but range from 10 to more than 600 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 5 inches thick. The subsurface layer is yellowish brown sandy loam to a depth of 9 inches. The subsoil is strong brown sandy loam to 14 inches, yellowish red sandy clay loam to 22 inches, and red sandy clay loam to 74 inches.

This soil is moderately permeable and has a moderate to high available water capacity. It is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be cultivated over a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are areas of Bama soils that have a loamy sand surface layer and small areas of Benndale, Lucedale, Malbis, Notcher, and Troup soils. The included soils make up about 10 to 20 percent of this map unit, but individual areas generally are less than 3 acres.

This Bama soil has good potential for cultivated crops and pasture. There are no significant limitations for use and management.

Potential is good for loblolly, slash and longleaf pines. There are no significant limitations for woodland management.

This soil has good potential for most urban uses. Low strength is a moderate limitation for local roads and streets. This limitation can be overcome by proper engineering design. Septic tank absorption fields function well in this soil.

This Bama soil is in capability class I and in woodland group 2o.

5—Bama sandy loam, 2 to 5 percent slopes. This well drained, gently sloping soil is on ridgetops and side slopes on Coastal Plain uplands. Slopes are mostly long and smooth. Individual areas are generally from 20 to 300 acres but range from 5 to 500 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 5 inches thick. The subsurface layer is yellowish brown sandy loam to a depth of about 9 inches. The subsoil is strong brown sandy loam to 14 inches, yellowish red sandy clay loam to 22 inches, and red sandy clay loam to 74 inches.

This soil is moderately permeable and has moderate to high available water capacity. It is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be tilled over a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Benndale, Lucedale, Malbis, Notcher, and Troup soils. Some areas of Bama soils that have slopes of more than 5 percent and areas that have loamy sand surface texture are also included. Included soils make up about 10 to 20 percent of the map unit, but individual areas are generally less than 5 acres.

This Bama soil has good potential for cultivated crops and pasture. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage, contour farming, terraces, grassed waterways, and the use of cover crops—including grasses and legumes—help reduce runoff, control erosion, and maintain good soil tilth.

Potential is good for loblolly, slash, and longleaf pines. There are no significant limitations for woodland management.

This soil has good potential for most urban uses. Low strength is a moderate limitation for local roads and streets. This factor can be overcome by proper engineering design. Septic tank absorption fields function well in this soil.

This soil is in capability subclass IIe and in woodland group 2o.

6—Bama sandy loam, 5 to 8 percent slopes. This well drained, sloping soil is on side slopes adjacent to natural drainageways of Coastal Plain uplands. Slopes are mostly convex but become concave in some places near the drainageways. Individual areas are 5 to 100 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 5 inches thick. The subsurface layer is yellowish brown sandy loam to a depth of about 9 inches. The subsoil is strong brown sandy loam to 14 inches, yellowish red sandy clay loam to 22 inches, and red sandy clay loam to 74 inches.

This soil is moderately permeable and has a moderate to high available water capacity. It is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be tilled over a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bennedale, Lucedale, Malbis, Notcher, and Troup soils. Some areas of Bama soils with slopes of less than 5 percent and areas with loamy sand surface texture are also included. Included soils make up 10 to 30 percent of this map unit, but individual areas are generally less than 5 acres.

This Bama soil has good to fair potential for cultivated crops and pasture. Erosion can be a severe hazard when this soil is clean tilled. Contour farming, minimum tillage, terraces and grassed waterways, or tile outlet systems help control erosion and runoff on this soil. Also, cropping systems that include cover crops or perennial sod crops are needed. Crop residue returned to the soil helps maintain good tilth and organic matter content.

Potential is good for loblolly, slash, and longleaf pines. There are no significant limitations for woodland use or management.

This soil has good potential for most urban uses. Slope is a moderate limitation for small commercial buildings, and low strength is a moderate limitation for local roads and streets. These limitations can be overcome by proper engineering design. Septic tank absorption fields function well in this soil.

This Bama soil is in capability subclass IIIe and woodland group 2o.

7—Bayou-Escambia association, gently undulating. This map unit consists of poorly drained and somewhat poorly drained soils in a regular and repeating pattern on broad flats in the Gulf Coast Flatwoods. Bayou soils are on broad flats adjacent to poorly defined drainageways. Escambia soils are on slightly higher, gently undulating ridges. Slopes range from 0 to 2 percent. Mapped areas are irregular in shape and range from about 500 to over 2,500 acres. Individual areas of Escambia soils range from 5 to 25 acres, and areas of Bayou soils range from 30 to over 250 acres.

Bayou soils and similar soils make up about 56 percent of the map unit. Typically, the surface layer is very dark gray and dark gray sandy loam about 9 inches thick. The subsurface layer is light brownish gray sandy loam to a depth of 18 inches. The upper part of the subsoil, to a depth of 43 inches, is light gray sandy loam that has mottles in shades of yellow, brown, gray, and red. The lower part to 66 inches is light gray and gray sandy clay loam that has mottles in shades of brown, yellow, and red.

Bayou soils are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. The available water capacity is moderate. These soils are low in natural fertility and organic matter content. Reaction is strongly acid to very strongly acid in the upper part but ranges from medium acid to extremely acid in the lower part. A water table is at or near the surface in winter and spring.

The somewhat poorly drained Escambia soils and similar soils make up about 28 percent of the map unit. Typically, the surface layer is very dark gray sandy loam about 5 inches thick. The subsurface layer is light olive brown loam to a depth of about 8 inches. The upper part of the subsoil is light yellowish brown loam to 32 inches. It has mottles in shades of gray, brown, yellow, and red. The lower part to 65 inches is mottled gray, brown, yellow, and red loam with 5 to 10 percent nodules of plinthite.

Escambia soils are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the layers with plinthite. The available water capacity is moderate. The soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid. These soils have a seasonal high water table at a depth of 1 1/2 to 2 1/2 feet during winter and early spring.

Minor soils make up about 16 percent of the map unit. They include the moderately well drained Harleston soils and the well drained to moderately well drained Poarch soils; the poorly drained Grady soil; and the very poorly drained Dorovan, Johnston, and Pamlico soils. Also included are areas of poorly drained soils that have both sandy and loamy subsoils. The soils with loamy subsoils are underlain with stratified sandy materials.

Potential of this map unit is poor for cultivated crops and fair for pasture. Wetness is the main limitation. Water remains on the surface of Bayou soils well into the spring and delays tilling. Escambia soils are also wet, and their potential is further reduced by the small size and irregular shape of the areas. Ditching and tile drainage systems will help overcome the wetness limitation, but adequate drainage outlets are difficult to find.

Most of the acreage is used for woodland. Bayou soils have poor potential for pine because of wetness (fig. 4). Escambia soils have good potential for loblolly and slash

pines and sweetgum, but the small size of the areas somewhat reduces the potential. Both soils have a moderate equipment limitation and windthrow hazard. In addition, the Bayou soils have a severe seedling mortality rate because of wetness.

These soils have poor potential for most urban uses. Wetness is the major limitation. This limitation is difficult to overcome because of the limited number of drainage outlets in the unit.

Bayou soils are in capability subclass IVw and in woodland group 5w. Escambia soils are in capability subclass IIw and in woodland group 2w.

8—Beaches. This map unit consists of areas of sandy beaches on Dauphin Island and along Mobile Bay. These areas are periodically reworked by wind and water action. They have no soil development and have no vegetation on them. They are subject to flooding by tidewaters and are saturated to near the surface. Depth to the water table fluctuates with the rise and fall of the tide. Slope is dominantly less than 3 percent but ranges up to 5 percent. Individual areas are generally from 1/4 mile to 4 miles long and 50 to 300 feet wide.

Typically, Beaches are white or light gray sand over 5 feet thick. In most places, the sand contains few to many shell fragments and black or brown sand grains.

Included in this map unit are areas of Duckston and Fripp soils. Also included are areas of mostly sandy fill material from dredging operations. The fill material and included soils make up about 10 to 15 percent of this map unit.

Figure 4.—Longleaf pine growing on Bayou soils in an area of Bayou-Escambia association, gently undulating.

Permeability of Beaches is very rapid, and the available water capacity is very low. Beaches are low in natural fertility and very low in organic matter content. Reaction is moderately alkaline to neutral throughout.

This unit has poor potential for cultivated crops, pasture, woodland, and most urban uses because of the flood hazard from tides and because of the excess salt. It has good potential for recreation, sunbathing, swimming, and surf fishing.

Beaches are not assigned to a capability subclass or a woodland group.

9—Benndale sandy loam, 0 to 2 percent slopes. This well drained, nearly level soil is on ridgetops and broad flats of the Coastal Plain uplands. Slopes are smooth and slightly convex. Individual areas are mostly 5 to 100 acres.

Typically, the surface layer is dark gray sandy loam about 5 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 11 inches. The upper part of the subsoil, to 40 inches, is yellowish brown loam, and the lower part to 72 inches is yellowish brown clay loam that has mottles in shades of yellow, brown, and red.

Permeability and available water capacity are moderate. This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. This soil has good tilth and can be tilled throughout a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bama, Harleston, Heidel, Malbis, Poarch, and Troup soils. The included soils make up 5 to 20 percent of the map unit, but individual areas are generally less than 5 acres.

This Benndale soil has good potential for cultivated crops and pasture; most of the acreage is used for these purposes. There are no significant limitations for use and management.

Potential is good for loblolly, longleaf, and slash pines. There are no significant limitations for woodland use or management.

This soil has good potential for most urban uses and has no significant limitations. Low strength is a moderate limitation for local roads and streets, but this can be overcome by proper engineering design. Septic tank absorption fields function well in this soil.

This soil is in capability class I and in woodland group 2o.

10—Benndale sandy loam, 2 to 5 percent slopes. This well drained, gently sloping soil is on ridgetops and side slopes of the Coastal Plain uplands. Slopes are

variable in length and are concave and convex. Individual areas are 3 to 400 acres.

Typically, the surface layer is dark gray sandy loam about 5 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 11 inches. The upper part of the subsoil, to 40 inches, is yellowish brown loam, and the lower part, to 72 inches, is yellowish brown clay loam that has mottles in shades of yellow, brown, and red.

Permeability and available water capacity are moderate. This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. This soil has good tilth and can be tilled throughout a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bama, Harleston, Heidel, Malbis, and Troup soils. Included soils make up 5 to 20 percent of this map unit, but individual areas are generally less than 5 acres.

This Benndale soil has good potential for cultivated crops and pasture. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage, contour farming, terraces, and cover crops, including grasses and legumes, help reduce runoff and control erosion.

This soil has good potential for most urban uses and has no significant limitations. Low strength is a moderate limitation for local roads and streets, but this can be overcome by proper engineering design. Septic tank absorption fields function well in this soil.

This soil is in capability subclass IIe and in woodland group 2o.

11—Benndale sandy loam, 5 to 8 percent slopes. This well drained, sloping soil is on side slopes adjacent to natural drainageways of the Coastal Plain uplands. Slopes are variable in length and are both concave and convex. Individual areas are 4 to 400 acres.

Typically, the surface layer is dark gray sandy loam about 5 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 11 inches. The upper part of the subsoil, to about 40 inches, is yellowish brown loam, and the lower part, to 72 inches, is yellowish brown clay loam that has mottles in shades of yellow, brown, and red.

Permeability and available water capacity are moderate. This soil is low in natural fertility and organic matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. This soil has good tilth and can be tilled throughout a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bama, Heidel, Malbis, and Troup soils. Small areas of Benndale soils with loamy sand surface layers are also included. Included soils make up 5 to 25 percent of this unit.

This Benndale soil has good to fair potential for cultivated crops, and moderate yields can be obtained. Potential is good for hay and pasture. Erosion can be a severe hazard when this soil is clean tilled. Contour farming, minimum tillage, terraces, and grassed waterways or tile outlet systems are effective in helping to control runoff and erosion. Cropping systems that include cover crops or perennial sod crops are needed. Crop residue returned to the soil helps maintain good tilth and organic matter content.

This soil has good potential for loblolly, longleaf, and slash pines. There are no significant limitations for woodland use or management.

Potential is good for most urban uses. Slope is a moderate limitation for small commercial buildings, and low strength is a moderate limitation for local roads and streets. These limitations can be overcome by proper engineering design. Septic tank absorption fields function well in this soil.

This soil is in capability subclass IIIe and in woodland group 2o.

12—Benndale-Urban land complex, 0 to 8 percent slopes. This map unit consists of well drained, nearly level to sloping Benndale soils and areas of Urban land. Individual areas of this unit contain from 40 to 70 percent Benndale soils and 20 to 40 percent Urban land. Areas of the Benndale soils and Urban land are so intricately mixed or so small that mapping them separately was not practical at the scale selected for mapping.

Typically, Benndale soils have a surface layer of dark gray sandy loam about 5 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 11 inches. The upper part of the subsoil, to 40 inches, is yellowish brown loam, and the lower part, to 72 inches, is yellowish brown clay loam that has mottles in shades of yellow, brown, and red.

The Urban land part of this map unit is covered by streets, sidewalks, buildings, parking lots, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of the moderately well drained Annemaine, Harleston, and Malbis soils and the well drained Troup soils. Also included are areas that have been cut, filled, and graded and small areas of Benndale soils that have slopes of more than 8 percent.

Benndale soils are moderately permeable and have moderate available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The root zone is deep and easily penetrated by plant roots.

Benndale soils are used for building sites, lawns, gardens, and parks. They have good potential for most

locally adapted grasses, flowers, vegetables, and shrubs. The potential for recreational development is good.

Benndale soils have good potential for most urban uses. Areas of these soils that have slopes of more than 4 percent have a moderate limitation for small commercial buildings. Low strength is a moderate limitation for local roads and streets. Septic tank absorption fields function well in this soil.

Benndale soils are not assigned to a capability subclass, but the woodland group is 2o. Urban land is not assigned to a capability subclass or a woodland group.

13—Dorovan-Bibb association, 0 to 1 percent slopes. This map unit consists of very poorly drained and poorly drained soils in a regular and repeating pattern on stream bottoms and in swamps along streams. Dorovan soils are in slight depressions at the base of uplands. Bibb soils are on slightly higher positions than Dorovan soils and are adjacent to the stream channels. The mapped areas are irregular in shape, ranging from 20 to over 600 acres. Individual areas of each soil range from about 5 to 250 acres.

Dorovan soils and similar soils make up 70 percent of the map unit. Typically, the surface layer is very dark grayish brown muck about 8 inches thick. Below this is black muck to a depth of 80 inches. Soils having organic layers with redder hue were considered Dorovan soils in mapping.

Dorovan soils are very slowly permeable and have high available water capacity. Reaction is strongly acid or very strongly acid throughout. A water table is above or near the surface most of the year, and the soils are frequently flooded.

Bibb soils make up about 15 percent of this map unit. Typically, the surface layer is dark gray sandy loam about 5 inches thick. The underlying material to a depth of 21 inches is dark gray and very dark grayish brown sandy loam that has strata of sand and loamy sand; to 44 inches is light brownish gray loamy sand that has strata of loam; and to 60 inches is stratified light gray sand, very dark gray sandy loam, and pale brown loamy sand.

Bibb soils are moderately permeable and have high available water capacity. Reaction is strongly acid or very strongly acid throughout. A water table is near the surface mostly during winter and spring. These soils are frequently flooded for brief periods.

Minor soils make up about 15 percent of the map unit. They include the very poorly drained Pamlico soils in depressions and the very poorly drained Johnston soils on slightly higher elevations.

These soils are used almost entirely for woodland and for wildlife habitat. Dorovan soils have fair potential for water tupelo, sweetbay, and baldcypress. Bibb soils have fair potential for loblolly pine, slash pine, sweetgum, and water oak. Because of wetness, these soils have a severe equipment limitation and seedling mortality rate. The windthrow hazard is moderate. These soils have good potential as habitat for wetland wildlife.

Potential is poor for cultivated crops, pasture, and urban developments. The soils are frequently flooded and have a water table above or near the surface much of the year. Subsidence is a problem in drained areas of Dorovan soils.

Dorovan soils are in capability subclass VIIw and in woodland group 4w. Bibb soils are in capability subclass Vw and in woodland group 2w.

14—Dorovan-Levy association, 0 to 1 percent slopes. This map unit consists of very poorly drained soils in a regular and repeating pattern in depressional swamps and first bottoms along the Mobile and Tensaw Rivers. Mapped areas of these soils are dissected by meandering streams. Dorovan soils are in level and slightly depressional areas between the Mobile and Tensaw Rivers and toward the west between the Mobile River and the soils on terraces. Levy soils are around the perimeter of the Dorovan soils adjacent to natural levees that parallel the stream channels. They are on slightly higher positions than the Dorovan soils. Mapped areas of these soils are typically large, ranging from about 500 acres to over 5,000 acres. Individual areas of each soil range from 10 to 250 acres.

Dorovan soils make up 60 percent of the map unit. Typically, the surface layer is very dark grayish brown muck about 8 inches thick. Below this is black muck to a depth of 80 inches. Soils that have organic layers with redder hue were considered Dorovan soils in mapping.

Dorovan soils are very slowly permeable and have high available water capacity. Reaction is strongly acid or very strongly acid throughout. A water table is above or near the surface most of the year, and the soils are frequently flooded.

Levy soils make up about 20 percent of the map unit. Typically, the surface layer is gray silty clay loam about 6 inches thick. The underlying material to a depth of 75 inches is gray clay that has mottles of yellow and brown in the upper part.

Levy soils are slowly permeable and have high available water capacity. Reaction is strongly acid to extremely acid throughout. Water is near or above the surface most of the year, and the soils are frequently flooded.

Minor soils make up about 20 percent of the map unit. These include the poorly drained Bibb soils and the very poorly drained Pamlico soils. Also included are a few areas of coarser textured soils on natural levees adjacent to streams and areas of soils with from 16 to 40 inches of mineral deposits over organic layers.

This map unit is used for woodland and wildlife habitat. Potential is fair for water tolerant species such as water tupelo, sweetgum, and baldcypress. Dorovan and Levy soils have severe equipment limitations and seedling mortality rates because of wetness and flooding. The windthrow hazard is moderate.

Potential is poor for cultivated crops, pasture, and urban uses because of wetness and flooding. These limitations are difficult to overcome. Subsidence is a problem in drained areas of the Dorovan soils.

Dorovan soils are in capability subclass VIIw and in woodland group 4w. Levy soils are in capability subclass VIIw and in woodland group 3w.

15—Duckston sand, 0 to 2 percent slopes. This poorly drained, nearly level soil is on flats along the north side of Dauphin Island generally at elevations of less than 5 feet above sea level. Slopes are smooth and slightly concave. Individual areas are 10 to over 500 acres.

Typically, the surface layer is dark grayish brown sand about 2 inches thick. The subsurface layer, to a depth of 18 inches, is white sand. The next layer, to 28 inches, is dark gray stratified sand and loamy sand. The underlying material is gray and light gray sand that extends to 66 inches.

Permeability is very rapid above the water table, and the available water capacity is very low. This soil is low in natural fertility and organic matter content. Reaction is mildly alkaline through slightly acid. A water table is 1 to 2 feet below the surface, and this soil is subject to flooding during severe Gulf storms.

Included with this soil in mapping are small areas of Fripp and Osier soils, Psamments, and Beaches. The included soils make up less than 20 percent of this map unit.

This Duckston soil has poor potential for cultivated crops, pasture, woodland, and urban uses. Potential is limited because of wetness, the hazard of flooding, and saltwater spray from the Gulf. These limitations are difficult to overcome. This soil is used mainly for recreation associated with the nearby coastal beaches.

This soil is in capability subclass VIIw; it is not assigned to a woodland group.

16—Escambia sandy loam, 0 to 2 percent slopes. This somewhat poorly drained, nearly level soil is on Coastal Plain uplands mostly in the southern half of the county. Slopes are smooth and slightly convex. Individual areas range from 3 to 200 acres.

Typically, the surface layer is very dark gray sandy loam about 5 inches thick. The subsurface layer, to a depth of 8 inches, is light olive brown loam. The upper part of the subsoil, to 32 inches, is light yellowish brown loam. It has mottles in shades of gray, brown, yellow, and red. The lower part, to 65 inches, is mottled gray, brown, yellow, and red loam with 5 to 10 percent nodules of plinthite.

Permeability is moderate in the upper part of the subsoil and moderately slow in the layers with plinthite. The available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. A seasonal water table is 1 1/2 to 2 1/2 feet below the surface during winter and early spring. The soil remains wet for long periods but has good tilth when adequately drained. Plant root penetration is somewhat restricted in the layers with plinthite.

Included with this soil in mapping are small areas of Bayou, Harleston, Malbis, Poarch, and Smithton soils. Also included are small areas of a soil that is similar to this Escambia soil except that the lower subsoil is more clayey. Included soils make up about 5 to 20 percent of this map unit, but individual areas generally are less than 3 acres.

This Escambia soil has good potential for cultivated crops and pasture. The seasonal water table is a limitation that can be overcome by installing tile drains and ditches.

Most of the acreage is woodland, and potential is good for loblolly pine, slash pine, and sweetgum. The use of equipment is moderately restricted by wetness, and the windthrow hazard is moderate.

This soil has fair to poor potential for most urban uses. Wetness and low strength are moderate limitations for most building site developments. The use of septic tank absorption fields is severely restricted because of wetness and the moderately slow permeability of the lower part of the subsoil. These limitations can be partly overcome by drainage and by proper engineering design of structures.

This soil is in capability subclass IIw and in woodland group 2w.

17—Escambia-Urban land complex, 0 to 2 percent slopes. This map unit consists of somewhat poorly drained, nearly level Escambia soils and areas of Urban land. Individual areas of this unit contain from 45 to 65 percent Escambia soils and 15 to 40 percent Urban land. Areas of Escambia soils and Urban land are so intricately mixed or so small that mapping them separately was not practical at the scale selected for mapping.

Typically, Escambia soils have a surface layer of very dark gray sandy loam about 5 inches thick. The subsurface layer is light olive brown loam to a depth of 8 inches. The upper part of the subsoil, to 32 inches, is light yellowish brown loam. It has mottles in shades of gray, brown, yellow, and red. The lower part, to 65 inches, is mottled gray, brown, yellow, and red loam that has 5 to 10 percent nodules of plinthite.

The Urban land part of this map unit is covered by streets, sidewalks, buildings, parking lots, and other structures so obscuring the soils that identification is not feasible. Because these soils are covered with structures, these areas have a high rate of runoff.

Included in mapping are small areas of Harleston, Malbis, Poarch, and Smithton soils. Some of these soils have slopes up to 5 percent. Also included are areas of soils that have been cut, filled, and graded.

Escambia soils are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the layers with plinthite. The available water capacity is moderate. The soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. A seasonal water table is at depths of 1 1/2 to 2 1/2 feet below the surface during winter and early spring, and the soils remain wet for long periods.

Escambia soils are used for building sites, lawns, gardens, golf courses, and parks. Several vacant lots are within mapped areas. These soils have good potential for most locally adapted grasses, flowers, vegetables, and shrubs. They have fair potential for recreational development. Wetness and the moderately slow permeability of the lower part of the subsoil are the main limitations.

Escambia soils have fair to poor potential for most urban uses. Wetness and low strength are moderate limitations for most building site developments. The use of septic tank absorption fields is severely restricted because of wetness and the moderately slow permeability of the subsoil. These limitations can be partly overcome by drainage and by proper engineering design of structures.

Escambia soils are not assigned to a capability subclass; they are in woodland group 2w. Urban land is not assigned to a capability subclass or a woodland group.

18—Fripp sand, rolling. This excessively drained, rolling to undulating soil is on dune areas of Dauphin Island. Slopes are short and choppy and range from 2 to 20 percent. Mapped areas are long and narrow and are 50 to over 100 acres.

Typically, the surface layer is light gray sand about 4 inches thick. The underlying material to a depth of 36 inches is very pale brown sand and to 99 inches is white sand.

This soil is rapidly permeable, and the available water capacity is very low. This soil is low in natural fertility and organic matter content. Reaction is moderately alkaline through slightly acid. The root zone is deep. This soil is subject to rare flooding by tide waters during severe Gulf storms.

Included with this soil in mapping are a few areas of Beaches, and Duckston and Osier soils. Also included are areas of soils, in low swells between dunes, that are more poorly drained than this Fripp soil. The included soils make up about 20 percent of the map unit.

This Fripp soil has poor potential for cultivated crops, pasture, woodland, and most urban uses. Potential is limited because of the low available water capacity, the hazard of flooding, and the saltwater spray from the Gulf. Slope gradient and configuration are additional limitations for most uses. This soil is subject to wind erosion when not vegetated. It is used mainly for recreation associated with the nearby coastal beaches.

This soil is in capability subclass VIIs, but it was not assigned to a woodland group.

19—Grady loam, 0 to 1 percent slopes. This poorly drained soil is in saucer-shaped depressions of the Coastal Plain uplands. Individual areas range from 2 to 30 acres.

Typically, the surface layer is black loam about 6 inches thick. The upper part of the subsoil is dark gray loam to a depth of 12 inches, dark gray clay to 23 inches, and gray clay to 35 inches. It has mottles in shades of yellow, brown, and light gray. The lower part, to 66 inches, is mottled light gray, reddish yellow, and gray clay.

Permeability is slow, and available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is very strongly acid or extremely acid throughout except for the surface layer in limed areas. Water is near or above the surface except during extended dry periods. This soil has poor tilth, and it becomes cloddy if cultivated when wet. The root zone is deep.

Included with this soil in mapping are small areas of Malbis, Notcher, Robertsdale, and Saucier soils. These included soils are along the edge of delineations and make up about 10 to 20 percent of the map unit. Individual areas are generally less than 3 acres.

Potential of this Grady soil is poor for cultivated crops and pasture. This soil is wet or ponded most of the year. When the soil is drained, planting is often delayed because of wetness. Some areas of this soil are excavated ponds.

Most of the acreage is used for woodland. Potential is good for loblolly pine, slash pine, and sweetgum only with adequate surface drainage. Without drainage, the use of equipment is severely restricted, the seedling mortality rate is severe, and the windthrow hazard is moderate.

Potential for urban uses is poor. Wetness, ponding, and slow permeability are the main limitations.

This soil is in capability subclass Vw and in woodland group 2w.

20—Harleston sandy loam, 0 to 2 percent slopes. This moderately well drained, nearly level soil is on Coastal Plain terraces and uplands. Slopes are mainly long and smooth. Mapped areas are irregular in shape and range from 5 to 500 acres but are dominantly less than 100 acres.

Typically, the surface layer is very dark gray sandy loam about 3 inches thick. The subsurface layer, to about 10 inches, is light yellowish brown sandy loam. The upper part of the subsoil to 22 inches is light yellowish brown sandy loam and to 35 inches is brownish yellow loam. It has mottles in shades of gray and yellow. The lower part is mottled in shades of gray, yellow, red,

and brown. It is loam to 46 inches and sandy clay loam to 72 inches.

Permeability and available water capacity are moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. Tilth is good, and the soil can be worked throughout a moderate moisture range. The root zone is deep. This soil has a water table about 2 to 3 feet below the surface during winter and spring. Some low lying areas are subject to very brief flooding during periods of unusually high rainfall.

Included with this soil in mapping are areas of Benndale, Escambia, Malbis, Poarch, and Smithton soils. Also included are areas of Harleston soils that have loamy sand surface textures and areas that have slopes of more than 2 percent. Included soils make up 5 to 20 percent of this map unit, but individual areas of soils are less than 5 acres.

This soil has good potential for cultivated crops and pasture. The seasonal water table is a limitation that can be overcome by installing tile drains and ditches.

Most of the acreage is woodland, and the soil has good potential for loblolly pine, slash pine, and sweetgum. The use of equipment is moderately restricted by seasonal wetness.

Potential is fair to poor for most urban uses. Wetness and low strength are moderate limitations for most building site developments. Wetness is a severe limitation for septic tank absorption fields. These limitations can be partly overcome by installing adequate drainage systems and by using good design and installation procedures for structures.

This soil is in capability subclass IIw and in woodland group 2w.

21—Harleston-Urban land complex, 0 to 2 percent slopes. This map unit consists of moderately well drained, nearly level Harleston soils and areas of Urban land. Individual areas of this unit contain from 40 to 60 percent Harleston soils and 20 to 50 percent Urban land. Areas of the Harleston soils and Urban land are so intricately mixed or so small that mapping them separately was not practical at the scale selected for mapping.

Typically, Harleston soils have a surface layer of very dark gray sandy loam about 3 inches thick. The subsurface layer to about 10 inches is light yellowish brown sandy loam. The upper part of the subsoil to a depth of 22 inches is light yellowish brown sandy loam and to 35 inches is brownish yellow loam. It has mottles in shades of gray and yellow. The lower part is mottled in shades of gray, yellow, red, and brown. It is loam to 46 inches and sandy clay loam to a depth of 72 inches.

The Urban land part of this map unit is covered by streets, sidewalks, shopping centers, buildings, parking lots, and other structures that so obscure the soils that identification is not feasible. Because these soils are covered, these areas have a high rate of runoff.

Included in mapping are small areas of Benndale, Escambia, Malbis, Poarch, and Smithton soils. Also included are small areas of Harleston soils that have slopes up to 5 percent and areas that have been cut, filled, and graded.

Harleston soils are moderately permeable and have moderate available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. A seasonal water table is 2 to 3 feet below the surface during winter and early spring.

Harleston soils are used for building sites, lawns, gardens, parks, or open space areas. These soils have good potential for most locally adapted grasses, flowers, vegetables, and shrubs; wetness is not a significant limitation for these uses. The potential for recreational development is good.

Harleston soils have fair to poor potential for most building site developments and sanitary facilities because of wetness and low strength. These limitations may be partly overcome by drainage and by proper engineering design of structures.

Harleston soils are not assigned to a capability subclass; they are in woodland group 2w. Urban land is not assigned to a capability subclass or a woodland group.

22—Heidel sandy loam, 0 to 2 percent slopes. This well drained, nearly level soil is on broad flats of the Coastal Plain uplands. Slopes are long and slightly convex. Individual areas are mostly 20 to 100 acres but range to 300 acres.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil is reddish brown and yellowish red sandy loam that extends to a depth of 33 inches. The lower part to 68 inches is red sandy clay loam and to 92 inches is red sandy loam.

Permeability and available water capacity are moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be worked throughout a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bama, Benndale, Lucedale, and Troup soils. Small areas of Grady soils and wet spots are included. Also included are areas of Heidel soils that have loamy sand surface textures. Included soils make up 5 to 20 percent of this map unit, and individual areas are 1 to 4 acres.

Most of the acreage of this Heidel soil is used for cultivated crops and pasture. Potential is good for this use. Good tilth is easily maintained by returning crop residue to the soil. There are no significant limitations.

Potential is good for loblolly, slash, and longleaf pines. There are no significant limitations for woodland use or management.

This soil has good potential for most urban uses. There are no significant limitations. Septic tank absorption fields function well in this soil.

This soil is in capability class I and in woodland group 2o.

23—Heidel sandy loam, 2 to 5 percent slopes. This well drained, gently sloping soil is on ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Areas are irregular in shape and range from 5 to more than 300 acres.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil is reddish brown and yellowish red sandy loam that extends to a depth of 33 inches. The lower part to 68 inches is red sandy clay loam and to 92 inches is red sandy loam.

Permeability and available water capacity are moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. This soil has good tilth and can be worked throughout a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bama, Benndale, Lucedale, and Troup soils. Also included are small areas of more sloping and less sloping Heidel soils. Included soils make up 5 to 20 percent of this map unit, but individual areas are less than 5 acres.

About half of the acreage of this Heidel soil is used for cultivated crops and pasture. This soil has good potential for these uses. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard where cultivated crops are grown. Minimum tillage, terraces, contour farming, and the use of cover crops, including grasses and legumes, reduce runoff and help control erosion.

Potential is good for longleaf, slash, and loblolly pines. There are no significant limitations for woodland use or management.

This soil has good potential for most urban uses. Slopes over 4 percent are a moderate limitation for small commercial buildings, but this limitation can be easily overcome. Septic tank absorption fields function well in this soil.

This soil is in capability subclass IIe and in woodland suitability group 2o.

24—Heidel sandy loam, 5 to 8 percent slopes. This well drained, sloping soil is along the heads of natural drainageways and along side slopes of the Coastal Plain uplands. Slopes are long and narrow and are both concave and convex. Areas are irregular in shape and range from 5 to 100 acres.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil is reddish brown and yellowish red sandy loam that extends to a depth of 33 inches. The lower part is red sandy clay loam to 68 inches and red sandy loam to 92 inches.

Permeability and available water capacity are moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. This soil has good tilth and can be worked throughout a wide moisture range. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bama, Benndale, Notcher, and Troup soils. Small areas of more sloping and less sloping Heidel soils are also included. Included soils make up 5 to 25 percent of this unit, but individual areas are usually less than 5 acres.

This Heidel soil has good to fair potential for cultivated crops. Potential is limited by slope, small size, and irregular shape of areas. Erosion can be a severe hazard if cultivated crops are grown. Minimum tillage, contour farming, terraces, and grassed waterways or tile outlet systems help control erosion and runoff on this soil. Also, cropping systems that include cover crops or perennial sod crops are needed. Crop residues returned to the soil help maintain good tilth and organic matter content. Potential is good for hay and pasture.

Potential is good for loblolly, slash, and longleaf pines. There are no significant limitations for woodland use or management.

This soil has good potential for most urban uses. Slope is a moderate limitation for small commercial buildings, but this can be easily overcome. Septic tank absorption fields function well in this soil.

This soil is in capability subclass IIIe and in woodland group 2o.

25—Izagora-Annemaine association, moderately undulating. This map unit consists of moderately well drained soils in a regular and repeating pattern on broad Coastal Plain terraces. The loamy Izagora soils are on the broader, more gently sloping parts of the terraces. The clayey Annemaine soils are on the more sloping ridges and side slopes adjacent to meandering tributaries and major drainageways. Slope ranges from 2 to 8 percent. Mapped areas range from about 400 to over 2,000 acres. Individual areas of each soil range from 10 to 200 acres.

Izagora soils and similar soils make up about 54 percent of the map unit. Typically, the surface layer is very dark grayish brown sandy loam about 5 inches thick. The subsurface layer is brown sandy loam about 3 inches thick. The upper part of the subsoil, to a depth of about 14 inches, is yellowish brown loam; the middle part, to a depth of 54 inches, is yellowish brown and light yellowish brown clay loam that has mottles in shades of light gray, yellow, and red; and the lower part, to 80 inches, is light

gray and light brownish gray clay that has mottles in shades of red, yellow, and brown.

Izagora soils are moderately permeable in the upper part of the subsoil and slowly permeable in the lower part. The available water capacity is high. These soils are low in natural fertility and organic matter content. Reaction is strongly acid to extremely acid throughout except for the surface layer in limed areas. Tilth is good, and the soil can be worked over a wide moisture range. The root zone is deep and easily penetrated by plant roots. These soils have a water table 2 to 3 feet below the surface mostly during winter. They are subject to brief flooding during periods of unusually high rainfall.

Annemaine soils and similar soils make up about 31 percent of the map unit. Typically, the surface layer is dark grayish brown sandy loam about 3 inches thick. The subsurface layer is light yellowish brown loam to 7 inches. The upper part of the subsoil, to 11 inches, is strong brown clay loam; the middle part, to 42 inches, is yellowish red clay that has mottles in shades of gray and yellow, or it is mottled with shades of brown, gray, or red; and the lower part, to 54 inches, is strong brown sandy clay loam that has gray and brown mottles. The underlying material is strong brown loamy sand.

Annemaine soils are slowly permeable and have high available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and the soils can be worked over a moderate moisture range. These soils have a water table 1 1/2 to 2 1/2 feet below the surface during winter. They are subject to brief flooding during periods of unusually high rainfall.

Minor soils make up about 15 percent of the association. They include the somewhat excessively drained Alaga soils, the poorly drained Bibb and Bethera soils, and the very poorly drained Dorovan, Johnston, and Pamlico soils.

Potential of these Izagora and Annemaine soils is good for cultivated crops and pasture. Soils in this unit are seasonally wet, but this seldom delays tillage operations when adequate surface drainage is provided. Erosion is a moderate hazard on some of the more sloping areas.

Most of the acreage is woodland; potential is good for loblolly pine, slash pine, yellow-poplar, and sweetgum. The use of equipment is moderately restricted by seasonal wetness of the soils.

These soils have poor potential for most urban uses. Wetness, low strength, and the hazard of flooding are the major limitations. Drainage and proper engineering design of structures will help overcome the limitations. Flooding is rare, typically very shallow, and of brief duration. The use of septic tank absorption fields is severely restricted because of wetness and slow permeability of the soils.

Izagora soils are in capability subclass IIw and in woodland group 2w. Annemaine soils are in capability subclass IIIe and in woodland group 3w.

26—Izagora-Bethera association, gently undulating. This map unit consists of moderately well drained and poorly drained soils in a regular and repeating pattern on broad Coastal Plain terraces. The loamy Izagora soils are on broad flats and gently sloping side slopes, and the clayey Bethera soils are in narrow to broad depressions and narrow drainageways. Slope ranges from 0 to 3 percent. Mapped areas are mostly irregular in shape and range from 400 to 1,600 acres. Individual areas of each soil range from 5 to 400 acres.

Izagora soils and similar soils make up about 62 percent of the map unit. Typically, the surface layer is very dark grayish brown sandy loam about 5 inches thick. The subsurface layer is brown sandy loam about 3 inches thick. The upper part of the subsoil, to a depth of about 14 inches, is yellowish brown loam; the middle part, to about 54 inches, is yellowish brown and light yellowish brown clay loam that has mottles in shades of light gray, yellow, and red; and the lower part, to 80 inches, is light gray and light brownish gray clay that has mottles in shades of red, yellow, and brown.

Izagora soils are moderately permeable in the upper part of the subsoil and slowly permeable in the lower part. The available water capacity is high. These soils are low in natural fertility and organic matter content. Reaction is strongly acid to extremely acid except for the surface layer in limed areas. Tilth is good, and the soils can be worked over a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. These soils have a water table 2 to 3 feet below the surface during winter months. They are subject to brief flooding during periods of unusually high rainfall.

Bethera soils and similar soils make up about 20 percent of the map unit. Typically, the surface layer is very dark gray loam about 4 inches thick. The subsurface layer is gray loam about 2 inches thick. The subsoil to a depth of 12 inches is light brownish gray clay loam and to 80 inches is light gray clay loam that has mottles in shades of gray, brown, yellow, and red.

Bethera soils are moderately slowly to slowly permeable and have high available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid to extremely acid except for the surface layer in limed areas. These soils have a water table near the surface mostly during winter and spring; they are subject to occasional brief flooding.

Minor soils make up about 18 percent of the map unit and include the somewhat excessively drained Alaga soils, the moderately well drained Annemaine and Harleston soils, the poorly drained Smithton soils, and the very poorly drained Johnston and Dorovan soils.

Potential of these Izagora and Bethera soils for cultivated crops is good to fair. Wetness is the major limita-

tion. Izagora soils are seasonally wet, but this limitation seldom delays tillage operations when adequate surface drainage is provided. The Bethera soils are more poorly drained and require both surface and subsurface drainage. The potential for pasture is good.

Most of the acreage is woodland. Potential for growing loblolly pine, slash pine, and sweetgum is good. Izagora soils have a moderate seedling mortality rate, and the use of equipment is moderately restricted because of wetness. These limitations are severe on Bethera soils. These limitations can be overcome by harvesting trees during dry seasons.

These soils have poor potential for most urban uses. Wetness, low strength, and the hazard of flooding are the major limitations. The use of septic tank absorption fields is severely restricted because of wetness and slow permeability.

Izagora soils are in capability subclass IIw and in woodland group 2w. Bethera soils are in capability subclass IVw and in woodland group 2w.

27—Johnston-Pamlico association, 0 to 1 percent slopes. This map unit consists of very poorly drained mineral and organic soils in a regular and repeating pattern on stream bottoms and in swampy areas along streams of the Gulf Coast Flatwoods. Johnston soils are in slightly higher positions than Pamlico soils on flat areas adjacent to uplands and along weakly expressed drainageways. Pamlico soils are in depressional areas in the flats. Mapped areas range from 100 to 2,000 acres. Individual areas of each soil range from 10 to 1,000 acres.

Johnston soils and similar soils make up about 61 percent of the map unit. Typically, the surface layer is black mucky loam about 6 inches thick. The subsurface layer is very dark gray mucky loam to a depth of 36 inches. The underlying material is dark gray and gray loamy sand to 46 inches, then light gray sand to 72 inches.

Johnston soils are moderately rapidly permeable and have high available water capacity. Reaction is strongly acid or very strongly acid throughout. These soils are frequently flooded and have a water table above or near the surface most of the time.

Pamlico soils and similar soils make up about 21 percent of the map unit. Typically, the surface layer is black muck about 5 inches thick. The next layers are black and very dark brown muck that extend to a depth of 38 inches. The underlying material is gray and light gray sand to 66 inches.

Pamlico soils are moderately permeable and have moderate to high available water capacity. Reaction is very strongly acid or extremely acid throughout. These soils are frequently flooded and have a water table above or near the surface most of the time.

Minor soils make up about 18 percent of the map unit. They include the moderately well drained Harleston and Pactolus soils, the poorly drained Bibb, Osier, and Smithton soils, and the very poorly drained Dorovan soils.

These Johnston and Pamlico soils have poor potential for cultivated crops and pasture because of wetness and flooding. Most of the acreage of these soils is woodland and wildlife habitat. Johnston soils have good potential for loblolly pine, slash pine, and sweetgum on areas with adequate surface drainage. Pamlico soils have fair potential for loblolly pine, slash pine, and baldcypress on areas with adequate surface drainage. The use of equipment is severely restricted, and the seedling mortality rate and windthrow hazard are severe limitations because of wetness. Potential is good for wetland wildlife habitat.

These soils have poor potential for most urban uses because of wetness and flooding. These limitations are very difficult to overcome. Subsidence is a problem in drained areas of Pamlico soils.

Johnston soils are in capability subclass VIIw and in woodland group 1w. Pamlico soils are in capability subclass VIIw and woodland group 4w.

28—Lafitte muck, 0 to 1 percent slopes. This very poorly drained, nearly level organic soil is along the mouths of streams and rivers in tidal marsh areas of the Gulf Coast Flatwoods. It has a dense cover of grasses that are tolerant to brackish water. Mapped areas are irregular in shape and range from 10 to over 400 acres.

Typically, the surface layer is very dark grayish brown muck about 7 inches thick. The next layers are very dark brown muck to a depth of about 63 inches. The underlying material is very dark gray silty clay to a depth of 73 inches.

Permeability is moderately rapid, and the available water capacity is high. This soil is low in natural fertility and high in organic matter content. Reaction is mildly alkaline to slightly acid when the soil is moist, and reaction is extremely acid when the soil has been air dried. The root zone is deep and easily penetrated by roots of plants that are salt and water tolerant. These soils have water near or above the surface and are subject to flooding by brackish water at high tide.

Included in mapping are areas of Axis soils and a mineral soil similar to Axis. These areas are mainly adjacent to the stream and river channels. Also included are areas that have been filled with sandy and clayey materials from dredging operations and areas of soils that are similar to Lafitte soils but have organic layers with redder hue. The included soils make up 10 to 20 percent of the map unit.

Most of the acreage of this Lafitte soil is used for wetland wildlife habitat, and the soil has good potential for this use. This soil has poor potential for cultivated crops, pasture, and woodland because of wetness and flooding with brackish water. Potential for urban use is also poor. Limitations include flooding, wetness, low

strength, and excess humus. If the soil were drained, subsidence would be a problem.

This soil is in capability subclass VIIIw; it is not assigned to a woodland group.

29—Lucedale sandy loam, 0 to 2 percent slopes. This well drained, nearly level soil is on ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 4 to 300 acres, but typically are 10 to about 100 acres.

Typically, the surface layer is dark reddish brown sandy loam about 8 inches thick. The upper part of the subsoil is dark reddish brown sandy loam to a depth of 16 inches; the middle part is dark red sandy clay loam to 50 inches; and the lower part is dark red sandy clay loam that extends to 80 inches.

Permeability is moderate and available water capacity is high. This soil is low in natural fertility and organic matter content. It is slightly acid to very strongly acid throughout except for the surface layer in limed areas. This soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

Included with this soil in mapping are small areas of Bama, Heidel, and Notcher soils. Also included are areas of Lucedale soils with slopes of more than 2 percent. Included soils make up 5 to 15 percent of this map unit, but individual areas are less than 5 acres.

Most of the acreage of this Lucedale soil is used for cultivated crops and pasture, and the potential is good for these uses (fig. 5). There are no significant limitations.

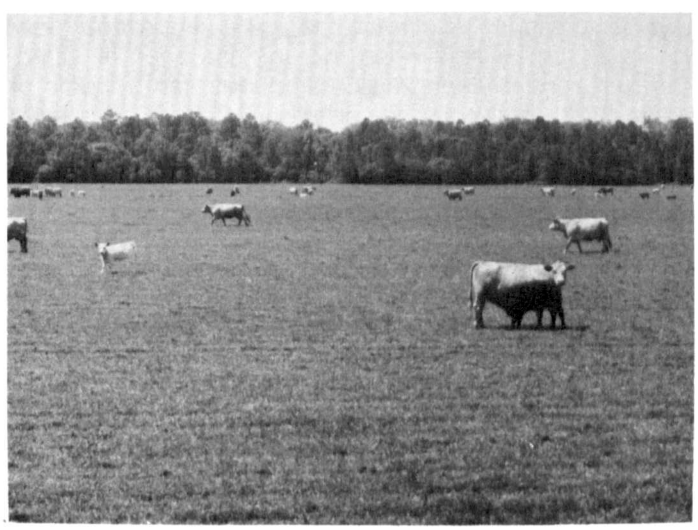


Figure 5.—Bahiagrass is used for pasture on Lucedale sandy loam, 0 to 2 percent slopes.

Potential is good for loblolly, longleaf, and slash pines. There are no significant limitations for woodland use or management.

This soil has good potential for urban use. There are no significant limitations.

This soil is in capability class I and in woodland group 2o.

30—Malbis sandy loam, 0 to 2 percent slopes. This moderately well drained, nearly level soil is on Coastal Plain uplands mainly in the southern part of the county. Slopes are smooth and convex. Individual areas range from 10 to 200 acres.

Typically, the surface layer is dark grayish brown sandy loam about 5 inches thick. The subsurface layer is yellowish brown and dark grayish brown sandy loam that extends to a depth of 7 inches. The upper part of the subsoil, to a depth of about 46 inches, is yellowish brown loam; the middle part, to 60 inches, is yellowish brown loam that has mottles in shades of brown and red; and the lower part, to 72 inches, is mottled brownish yellow, red, strong brown, and light gray sandy clay loam. The middle and lower parts have 10 to 20 percent slightly brittle nodules of plinthite.

Permeability is moderate in the upper part of the subsoil and moderately slow in layers that have plinthite. Available water capacity is moderate to high. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be worked over a wide moisture range. Plant roots are somewhat restricted in the layers that have plinthite. A water table is 2 1/2 to 4 feet below the surface during winter.

Included with this soil in mapping are small areas of Benndale, Grady, Notcher, Poarch, and Saucier soils. Included soils make up 5 to 15 percent of this map unit, but individual areas are less than 5 acres.

Most of the acreage of this Malbis soil is used for cultivated crops and pasture. Potential is good for these uses.

This soil has good potential for loblolly, slash, and longleaf pines. There are no significant limitations for woodland use or management.

Potential is good to fair for building site developments. Low strength is a moderate limitation for local roads and streets, and wetness is a moderate limitation for dwellings with basements. These limitations can be partly overcome by proper engineering design of structures. The use of septic tank absorption fields is severely restricted because of seasonal wetness and the moderately slow permeability of the layers that have plinthite. This limitation is difficult to overcome.

This soil is in capability class I and in woodland group 2o.

31—Malbis sandy loam, 2 to 5 percent slopes. This moderately well drained, gently sloping soil is on Coastal Plain uplands mainly in the southern part of the county. Slopes are smooth and convex. Mapped areas are generally long and narrow and range from 5 to 200 acres.

Typically, the surface layer is dark grayish brown sandy loam about 5 inches thick. The subsurface layer is yellowish brown and dark grayish brown sandy loam that extends to a depth of 7 inches. The upper part of the subsoil, to about 46 inches, is yellowish brown loam; the middle part, to 60 inches, is yellowish brown loam that has mottles in shades of brown and red; and the lower part, to 72 inches, is mottled brownish yellow, red, strong brown, and light gray sandy clay loam. The middle and lower parts have 10 to 20 percent slightly brittle nodules of plinthite.

Permeability is moderate in the upper part of the subsoil and moderately slow in layers that have plinthite. Available water capacity is moderate to high. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be worked over a wide moisture range. Plant roots are somewhat restricted in the layers with plinthite. A water table is 2 1/2 to 4 feet below the surface during winter.

Included with this soil in mapping are small areas of Bama, Benndale, Notcher, and Poarch soils. Also included are a few small areas of Saucier and Grady soils in depressions. Included soils make up 10 to 20 percent of this map unit, but individual areas are less than 5 acres.

Most of the acreage of this Malbis soil is used for cultivated crops and pasture; potential is good for these uses. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage, terraces, contour farming, and the use of cover crops help control erosion and reduce runoff.

This soil has good potential for loblolly, slash, and longleaf pines. There are no significant limitations for woodland use or management.

Potential is good to fair for most building site developments. Low strength is a moderate limitation for local roads and streets. Wetness is a moderate limitation for dwellings with basements. Slopes over 4 percent are a moderate limitation for small commercial buildings. These limitations can be partly overcome by good design of structures. The moderately slow permeability and wetness are severe limitations for septic tank absorption fields. This limitation is difficult to overcome.

This soil is in capability subclass IIe and in woodland suitability group 2o.

32—Notcher sandy loam, 0 to 2 percent slopes. This moderately well drained, nearly level soil is on Coastal Plain uplands in the southern part of the county. Slopes are smooth and slightly convex. Individual areas range from 15 to 400 acres.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil has 10 to 25 percent iron concretions and is yellowish brown loam to a depth of 44 inches. The lower part is clay loam to 76 inches. It is mottled in shades of gray, yellow, brown, and red, and has a few iron concretions and 10 to 15 percent nodules of plinthite.

Permeability is moderate in the upper part of the subsoil and moderately slow in the layers with plinthite. The available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and the soil can be worked over a wide moisture range. The root zone is somewhat restricted by the concretions and by the layers with plinthite. A water table is 3 to 4 feet below the surface during winter and early spring.

Included with this soil in mapping are areas of Bama, Grady, Malbis, Robertsdale, and Saucier soils. Included soils make up 10 to 15 percent of the map unit. Individual areas are mostly less than 5 acres.

Most of the acreage of this Notcher soil is used for cultivated crops and pasture. Potential is good for these uses.

This soil has good potential for loblolly, longleaf, and slash pines. There are no significant limitations for woodland use or management.

Potential is good to fair for most building site developments. Low strength is a moderate limitation for structures, but this can be overcome by proper engineering design. Wetness is a moderate limitation for dwellings with basements. The moderately slow permeability and seasonal wetness are severe limitations for septic tank absorption fields.

This soil is in capability class I and in woodland group 2o.

33—Notcher sandy loam, 2 to 5 percent slopes. This moderately well drained, gently sloping soil is on Coastal Plain uplands in the southern part of the county. Slopes are smooth and convex. Individual areas range from about 5 to 200 acres.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil has 10 to 25 percent iron concretions and is yellowish brown loam to a depth of 44 inches. The lower part is clay loam to 76 inches. It is mottled in shades of gray, yellow, brown, and red and has a few iron concretions and 10 to 15 percent nodules of plinthite.

Permeability is moderate in the upper part of the subsoil and moderately slow in the layers that have plinthite. The available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and this soil can be worked over a wide moisture range. The root zone is somewhat restricted by the concretions and by

the layers with plinthite. A water table is 3 to 4 feet below the surface during winter and early spring.

Included with this soil in mapping are small areas of Bama, Grady, Malbis, and Saucier soils. Included soils make up 5 to 15 percent of this map unit, and individual areas are generally less than 5 acres.

Most of the acreage of this Notcher soil is used for cultivated crops and pasture. Potential is good for these uses. Erosion is a moderate hazard if this soil is used for cultivated crops. Minimum tillage, terracing, contour farming, grassed waterways, and tile outlet systems will help slow runoff and control erosion.

This soil has good potential for loblolly, longleaf, and slash pines. There are no significant limitations for woodland use or management.

Potential is good to fair for most building site developments. Low strength is a moderate limitation for structures, but this can be overcome by proper engineering design. Wetness is a moderate limitation for dwellings with basements. The moderately slow permeability and seasonal wetness are severe limitations for septic tank absorption fields.

This soil is in capability subclass IIe and in woodland group 2o.

34—Notcher sandy loam, 5 to 8 percent slopes. This moderately well drained, sloping soil is on Coastal Plain uplands in the southern part of the county. Slopes are smooth; they are convex on side slopes and concave at the heads of drainageways. Individual areas are mostly long and narrow and range from 5 to 150 acres.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil has 10 to 25 percent iron concretions and is yellowish brown loam to a depth of 44 inches. The lower part is clay loam to 76 inches. It is mottled in shades of gray, yellow, brown, and red and has a few iron concretions and 10 to 15 percent nodules of plinthite.

Permeability is moderate in the upper part of the subsoil and moderately slow in the layers that have plinthite. The available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be worked over a wide moisture range. The root zone is somewhat restricted by the concretions and by the layers that have plinthite. A water table is 3 to 4 feet below the surface for short periods during winter and early spring.

Included with this soil in mapping are small areas of Bama, Heidel, Malbis, and Troup soils. Also included are a few small areas of a clayey soil. Included soils make up 10 to 20 percent of this map unit, but individual areas are less than 5 acres.

This Notcher soil has fair to good potential for cultivated crops and good potential for pasture. The small size of some areas and slope are the main limitations. Erosion is a moderate to severe hazard if the soil is used for cultivated crops. Minimum tillage, terracing, contour farming, and grassed waterways help control erosion and reduce runoff.

Most of the acreage is used for woodland, and potential is good for loblolly, longleaf, and slash pines. There are no significant limitations for woodland use or management.

Potential is fair to good for most building site developments. Low strength is a moderate limitation for structures. In addition, slope is a moderate limitation for small commercial buildings, and wetness is a moderate limitation for dwellings with basements. These limitations can be partly overcome by proper engineering design. The moderately slow permeability and seasonal wetness are severe limitations for septic tank absorption fields.

This soil is in capability subclass IIIe and in woodland group 2o.

35—Osier loamy sand, 0 to 2 percent slopes. This poorly drained, nearly level soil is on low uplands and flood plains of the Coastal Plain and Gulf Coast Flatwoods. Mapped areas are mainly in the southern part of the county. Slopes are smooth and convex. Individual areas range from 5 to 100 acres.

Typically, the surface layer is very dark gray loamy sand about 6 inches thick. The underlying material to a depth of 16 inches is grayish brown loamy sand; to 43 inches is light brownish gray loamy sand that has mottles in shades of brown; and to 66 inches is light brownish gray and light gray fine sand.

Permeability is rapid, and available water capacity is low. This soil is very low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. This soil is subject to occasional brief flooding and has a water table at or near the surface for several months during the year.

Included with this soil in mapping are areas of Johnston, Pactolus, and Smithton soils. Also included are small areas of sandy soils that are high in organic matter content. Some areas of Osier soils on Dauphin Island have pockets of sandy loam in the lower part, and some areas have very dark gray layers at a depth of 40 inches or more. The included soils make up 10 to 25 percent of this map unit, but individual areas are generally less than 5 acres.

This Osier soil has poor potential for cultivated crops and pasture because of wetness.

Almost all of the acreage is woodland. This soil has fair potential for loblolly and slash pines. Potential is limited because of wetness. The seedling mortality rate is severe, and the windthrow hazard is moderate.

Potential is poor for most urban uses because of wetness and the hazard of flooding.

This soil is in capability subclass Vw and in woodland group 3w.

36—Pactolus loamy sand, 0 to 2 percent slopes. This moderately well drained to somewhat poorly drained, nearly level soil is on low uplands of the Coastal Plain and Gulf Coast Flatwoods. Mapped areas are mostly in the southern part of the county. Individual areas range from 5 to 200 acres.

Typically, the surface layer is dark grayish brown loamy sand about 3 inches thick. The underlying material to a depth of 10 inches is light yellowish brown loamy sand; to 39 inches is yellowish brown loamy sand that has light gray mottles; and to 70 inches is brownish yellow and light gray sand that has mottles in shades of gray, yellow, and brown.

Permeability is rapid, and the available water capacity is low. This soil is very low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. The root zone is deep and easily penetrated by plant roots. This soil has a seasonal water table at a depth of 1 1/2 to 2 1/2 feet mostly during winter and early spring and is subject to rare, very brief flooding during periods of unusually high rainfall.

Included in mapping are small areas of Harleston, Osier, Smithton, and Troup soils. Also included are a few small areas of Pamlico and Bibb soils. Included soils make up 10 to 25 percent of the map unit, but individual areas are generally less than 5 acres.

This Pactolus soil has poor potential for cultivated crops. Wetness often delays planting and tillage operations in the spring, and the soils are often droughty during the cropping season. Potential for pasture is fair. Applied plant nutrients leach rapidly from the root zone.

Most of the acreage is woodland. Potential is fair for loblolly and slash pines. The seedling mortality rate is moderate, and because of wetness, the use of equipment is somewhat restricted during winter and early spring.

Potential is poor for most urban uses because of wetness and the hazard of flooding. Wetness is a severe limitation for septic tank absorption fields.

This soil is in capability subclass IIIs and in woodland group 3w.

37—Pamlico-Bibb complex, 0 to 1 percent slopes. This map unit consists of small areas of Pamlico and Bibb soils in areas that are so intermingled that mapping them separately was not practical at the scale selected for mapping. The very poorly drained, organic Pamlico soil and the poorly drained, mineral Bibb soils are along natural drainageways in the lower Coastal Plain and Gulf Coast Flatwoods. Individual areas of each soil are long and narrow, ranging from less than 100 feet to more than 1,000 feet in width and up to several miles in length. Mapped areas range from 50 to over 300 acres.

Pamlico muck makes up about 57 percent of the map unit. Typically, the surface layer is black muck about 5 inches thick. The next layers are black and very dark brown muck that extend to a depth of 38 inches. The underlying material is gray and light gray sand to 66 inches.

Permeability is moderate in this Pamlico soil, and the available water capacity is moderate to high. Reaction is very strongly acid or extremely acid throughout. This soil is high in organic matter content. It is frequently flooded and has a water table above or near the surface most of the time.

Bibb sandy loam makes up about 25 percent of the complex. Typically, the surface layer is dark gray sandy loam about 5 inches thick. The underlying material to a depth of 21 inches is dark gray and very dark grayish brown sandy loam that has strata of sand and loamy sand; to 44 inches is light brownish gray loamy sand that has strata of loam, and to 60 inches is stratified light gray sand, very dark gray sandy loam, and pale brown loamy sand.

This Bibb soil is moderately permeable and has high available water capacity. Reaction is strongly acid or very strongly acid throughout. The water table is near the surface during winter and spring. This soil is frequently flooded.

Included with these soils in mapping are small areas of the very poorly drained Dorovan and Johnston soils. Also included are small areas of soils that are similar to Bibb soils except that they are better drained. These soils are typically adjacent to streams and creeks.

Most of the acreage of these Pamlico and Bibb soils is woodland and wildlife habitat. Potential is fair for loblolly and slash pines on areas with adequate surface drainage. These soils have severe equipment limitations and seedling mortality rates because of wetness. The windthrow hazard is moderate. The potential is good for wetland wildlife habitat.

These soils have poor potential for cultivated crops, pasture, and urban uses because of wetness and frequency of flooding. These limitations are difficult to overcome. Subsidence is a problem in drained areas of the Pamlico soil.

The Pamlico soil is in capability subclass VIIw and in woodland group 4w. The Bibb soil is in capability subclass Vw and in woodland group 2w.

38—Pits. These miscellaneous areas consist of open excavations from which soil and part of the underlying geologic material have been removed for use at another location. These areas range from about 5 to 50 feet in depth and from 1 to over 60 acres.

The floor and walls of most pits are made up of exposed geologic strata, and some pits hold water. Pits support little or no vegetation, and erosion is a severe hazard in some areas. The generally low available water capacity and low natural fertility make revegetation difficult. Some areas around the pits are covered with excess soil and geologic material, and many of these areas are partly covered with young pines, native shrubs, and grasses.

Pits are not assigned a capability subclass or a woodland group.

39—Poarch sandy loam, 0 to 2 percent slopes. This well drained to moderately well drained, nearly level soil is on Coastal Plain uplands in the southern half of the county. Slopes are smooth and convex. Individual areas range from 5 to 100 acres.

Typically, the surface layer is very dark grayish brown sandy loam about 6 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 11 inches. The upper part of the subsoil to 36 inches is yellowish brown loam. The middle part to 48 inches is brownish yellow loam that has mottles in shades of brown, red, and gray. The lower part to 66 inches is sandy clay loam. It is mottled in shades of gray, yellow, brown and red. The middle and lower parts of the subsoil have about 5 to 10 percent slightly brittle nodules of plinthite.

Permeability is moderate in the upper part of the subsoil and moderately slow in the layers that have plinthite. The available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be worked throughout a wide moisture range. Plant roots are somewhat restricted in the layers with plinthite. A water table is about 2 1/2 to 5 feet below the surface during winter.

Included with this soil in mapping are Benndale, Escambia, and Malbis soils. Also included are areas of Poarch soils that have loamy sand surface layers and small areas with slopes over 2 percent. Included soils make up 10 to 25 percent of the map unit, but individual areas are usually less that 5 acres.

Potential of this Poarch soil is good for cultivated crops, pasture, and hay. Most of the acreage is used for cultivated crops. There are no significant limitations for these uses.

Potential is good for loblolly, longleaf, and slash pines. There are no significant limitations for woodland use or management.

This soil has fair potential for most urban uses. Low strength and wetness are moderate limitations for building site developments, but these can be partly overcome by drainage and good design of structures. The perched water table and the moderately slow permeability of the lower part of the subsoil are severe limitations for septic tank absorption fields.

This soil is in capability class I and in woodland group 2o.

40—Psamments. These excessively drained soils are mostly on the north side of Dauphin Island. These sandy soils have been created by dredging and cut and fill operations adjacent to the water line. Soil areas are finger-shaped bodies that extend out into the water. They are nearly level on the top and have short, steep side slopes. Slope ranges from 1 to 15 percent. Individual areas range from 5 to 40 acres.

Typically, these soils are white or light gray sand with a few strata or pockets of finer textured material to a depth of 60 inches. Many areas have shell fragments and pockets of organic matter throughout the profile.

Permeability is rapid, and the available water capacity is low. These soils are low in natural fertility and very low in organic matter content. Reaction is mildly alkaline or neutral throughout. The root zone is deep and easily penetrated by plant roots. These soils have a water table at variable depths depending on the rise and fall of the tide and the height of fill above the water line.

Included with this soil in mapping are areas of Axis and Duckston soils. Also included are areas of Psamments that are less than 60 inches deep. The included soils make up about 20 percent of the map unit.

This map unit has poor potential for cultivated crops, pasture, and woodland because of the small size and irregular shape of the areas and because of the hazard of flooding and salt water spray during severe coastal storms.

The soils have poor potential for conventional urban uses because of the hazard of flooding during severe coastal storms. These soils are used as sites for summer homes and as access areas for boat launching and boat storage in the bay or in manmade inland channels. Most buildings are on pilings or stilts 6 to 10 feet above the ground surface (fig. 6). Damage to structures from flooding and wind can be expected during severe storms. The use of septic tanks is severely restricted because of wetness and the hazard of polluting bay waters.

Psamments are not assigned to a capability subclass or a woodland group.

41—Robertsdale loam, 0 to 1 percent slopes. This somewhat poorly drained, nearly level soil is on Coastal Plain uplands in the southern half of the county. Slopes are smooth and flat to slightly concave. Individual areas range from 5 to 400 acres.

Typically, the surface layer is very dark gray loam about 5 inches thick. The upper part of the subsoil, to a depth of 18 inches, is light olive brown and light yellowish brown loam. The middle part, extending to 48 inches, is mottled light gray, light yellowish brown, strong brown, and red loam over light gray loam that has mottles in shades of brown and red. The lower part, to 60 inches, is clay loam mottled in shades of red, gray, and brown. The soil has 5 to 20 percent iron concretions throughout and 10 to 15 percent slightly brittle nodules of plinthite in the middle and lower parts of the subsoil.

Permeability is moderate in the upper part of the subsoil and slow in the layers that have plinthite. The available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good after the seasonal

Figure 6.—Summer cottages on an area of Psamments adjacent to a constructed inland channel that is used for access to coastal waters.

water table drops in the spring. Plant root penetration is somewhat restricted by the layers that have plinthite. This soil has a water table 1 to 2 1/2 feet below the surface during winter and spring.

Included with this soil in mapping are areas of Grady, Notcher, and Saucier soils. Also included are small areas of soils that are similar to this Robertsdale soil except that they are more poorly drained. Included soils make up 5 to 15 percent of this map unit, but individual areas are less than 5 acres.

This Robertsdale soil has fair potential for cultivated crops and pasture, and high yields can be obtained. Potential is limited by wetness, which delays spring planting and tillage operations. An adequate drainage system is needed for high yields of cultivated crops, pasture, and hay. Erosion is not a problem with this soil.

Potential is good for slash pine, loblolly pine, and sweetgum. Seasonal wetness is a moderate limitation for equipment use, and the windthrow hazard is moderate.

This soil has poor potential for most urban uses because of wetness and low strength. Slow permeability and a high water table are severe limitations for septic tank absorption fields.

This soil is in capability subclass IIIw and in woodland group 2w.

42—Saucier sandy loam, 0 to 2 percent slopes. This moderately well drained, nearly level soil is on Coastal Plain uplands mainly in the southern half of the county. Slopes are smooth and flat to slightly concave. Mapped areas are irregular in shape, and individual areas range from 5 to 100 acres.

Typically, the surface layer is dark gray sandy loam about 5 inches thick. The upper part of the subsoil, to a depth of 30 inches, is light yellowish brown and yellowish brown loam. The middle part, to 61 inches, is sandy clay loam mottled in shades of brown, gray, and red. The lower part, to 72 inches, is mottled red, brown, and gray sandy clay loam. The soil has about 5 to 15 percent iron concretions throughout and 5 to 20 percent slightly brittle nodules of plinthite in parts of the subsoil.

Permeability is moderate in the upper part of the subsoil and slow in the layers that have plinthite. The available water capacity is moderate. This soil is low in natural fertility and organic matter content. Reaction is strongly

acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be worked throughout a moderate moisture range. Root penetration is restricted in the layers that have plinthite. A water table is 2 1/2 to 4 feet below the surface during winter.

Included with this soil in mapping are areas of Grady, Malbis, Notcher, and Robertsdale soils. Also included are small areas of soils that are similar to this Saucier soil except that they have less than 5 percent plinthite in the subsoil. Included soils make up 10 to 20 percent of this map unit, but individual areas are usually less than 5 acres.

Most of the acreage of this Saucier soil is used for cropland and pasture. Potential is good for cultivated crops (fig. 7), hay, and pasture. Planting and tillage operations are sometimes delayed by wetness.

This soil has good potential for slash and loblolly pines. Wetness moderately restricts the use of equipment, but this limitation can be overcome by harvesting trees during the drier seasons.

Potential is fair for most urban uses. Wetness and low strength are the main limitations. The seasonal high water table and slow permeability are severe limitations for septic tank absorption fields.

This soil is in capability subclass IIw and in woodland group 2w.

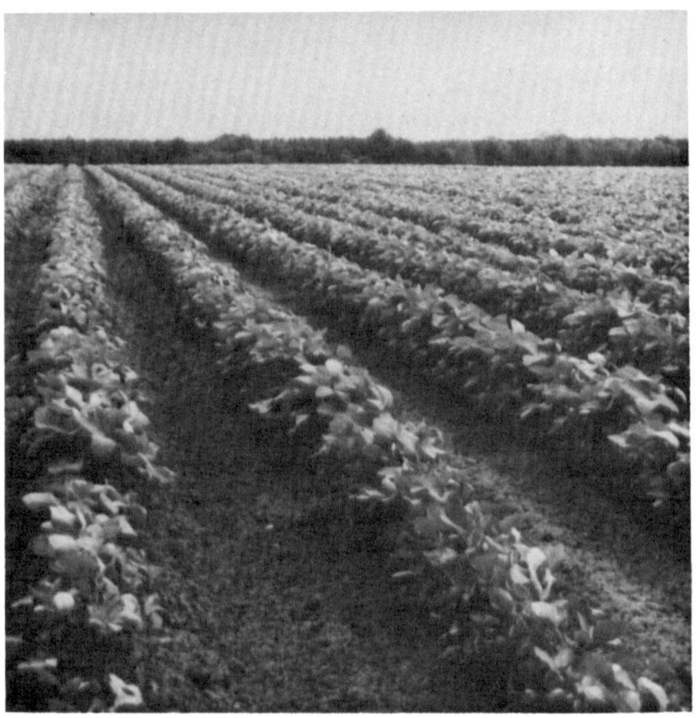


Figure 7.—Soybeans growing on Saucier sandy loam, 0 to 2 percent slopes.

43—Shubuta sandy loam, 2 to 5 percent slopes. This well drained, gently sloping soil is on knolls and ridgetops of Coastal Plain uplands. Slopes are mostly short and convex. Individual areas are 5 to 35 acres.

Typically, the surface layer is brown sandy loam about 4 inches thick. The subsurface layer is yellowish brown sandy loam to 6 inches. The subsoil to a depth of 14 inches is yellowish red clay loam; to 20 inches is yellowish red clay loam that has mottles in shades of yellow, brown, and gray; and to 82 inches is mottled gray, yellow, brown, and red clay loam.

This soil is moderately slowly permeable and has a high available water capacity. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and the soil can be worked over a moderate range of moisture content. The root zone is deep.

Included with this soil in mapping are small areas of Benndale, Harleston, Smithton, and Troup soils. Also included are areas of more sloping Shubuta soils. Included soils make up 10 to 20 percent of this map unit, but individual areas are generally less than 5 acres.

This Shubuta soil has fair potential for cultivated crops; however, high yields can be obtained. Potential is limited because of the small size of the areas and the short and choppy slopes. Erosion is a moderate hazard when cultivated crops are grown. Terracing or farming on the contour is difficult because of the short length and shape of slopes. Potential is good for hay and pasture.

This soil has good potential for loblolly and slash pines; most of the acreage is woodland. The use of equipment is moderately restricted during wet seasons because of the clayey nature of the soil. This is the only significant limitation for woodland use or management.

Potential is fair for most building site developments. Low strength is a moderate limitation for buildings and a severe limitation for local roads and streets. The moderately slow permeability is a severe limitation for septic tank absorption fields.

This soil is in capability subclass IIe and in woodland group 3c.

44—Shubuta-Troup association, rolling. This map unit consists of well drained soils in a regular and repeating pattern on narrow ridgetops and side slopes of Coastal Plain uplands. The clayey Shubuta soils are mainly on ridgetops, and the loamy Troup soils are mainly on side slopes. Slopes are complex and range from 2 to 8 percent. Mapped areas are irregular in shape and range from about 400 to 6,000 acres. Individual areas of each soil range from 5 to 300 acres.

Shubuta soils and similar soils make up about 39 percent of this map unit. Typically, the surface layer is brown sandy loam about 4 inches thick. The subsurface layer is yellowish brown sandy loam to 6 inches. The subsoil to a depth of 14 inches is yellowish red clay

loam; to 20 inches is yellowish red clay loam that has mottles in shades of yellow, brown, and gray; and to 82 inches is mottled gray, yellow, brown, and red clay loam.

Shubuta soils are moderately slowly permeable and have high available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. The root zone is deep.

Troup soils and similar soils make up about 25 percent of this map unit. Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 15 inches; brownish yellow loamy sand to 44 inches; and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

Troup soils are rapidly permeable in the sandy layers and moderately permeable in the subsoil. Available water capacity is low. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. The root zone is deep and easily penetrated by plant roots.

Minor soils make up about 36 percent of the map unit. They include areas of the well drained Benndale soils, the somewhat poorly drained Susquehanna soils, and the poorly drained Smithton soils on the uplands and the poorly drained and very poorly drained Bibb, Dorovan, and Johnston soils in or near natural drainageways.

These Shubuta and Troup soils have fair potential for cultivated crops and pasture. Potential is limited mainly by the choppy nature of slopes. Also, erosion is a moderate hazard on the Shubuta soils, and Troup soils are droughty.

Most of the acreage is woodland; the potential is good for loblolly, slash, and longleaf pines. The use of equipment is moderately restricted during wet seasons because of the clayey nature of the Shubuta soils. The mortality rate of seedlings is moderate on Troup soils.

These soils have fair to good potential for most urban uses. The low strength of the Shubuta soils is a moderate limitation for buildings and a severe limitation for local roads and streets. The moderately slow permeability is a severe limitation for septic tank absorption fields. Troup soils have good potential for most urban uses. Slopes of more than 4 percent are a moderate limitation for small commercial buildings, but this can be easily overcome.

Shubuta soils are in capability subclass IIe and in woodland group 3c. Troup soils are in capability subclass IVs and in woodland group 3s.

45—Smithton sandy loam, 0 to 1 percent slopes. This poorly drained, nearly level soil is on broad flats of Coastal Plain uplands and along stream terraces. Slopes are smooth and flat to slightly concave. Individual areas range from 5 to 400 acres.

Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The subsurface layer, to a depth of 17 inches, is gray sandy loam that has mottles in shades of brown and yellow. The subsoil is light gray sandy loam to 26 inches; light gray loam to 47 inches; and light gray silt loam to 72 inches. It is mottled in shades of yellow, brown, and red.

Permeability is moderately slow, and the available water capacity is moderate to high. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. This soil is subject to occasional flooding by runoff from adjacent uplands and has a seasonal high water table at or near the surface during the winter and spring.

Included with this soil in mapping are small areas of Dorovan, Escambia, Grady, Johnston, and Osier soils. Also included are small areas of soils that are similar to this Smithton soil except that they have more than 5 percent plinthite in the lower part of the subsoil. Included soils make up from 10 to 25 percent of this map unit, but individual areas are generally less than 5 acres.

This Smithton soil has poor potential for cultivated crops and fair potential for pasture. The seasonal high water table often delays tillage operations in the spring. Poor aeration in the root zone slows early root growth and results in stunted plants. Ditch and tile drainage systems will help overcome the wetness limitation, but adequate drainage outlets are difficult to find in most areas.

Most of the acreage is woodland. Potential is good for loblolly and slash pines and sweetgum on areas with adequate surface drainage. The use of equipment is restricted and the seedling mortality rate is severe because of wetness.

This soil has poor potential for most urban uses because of wetness. This limitation is difficult to overcome.

This soil is in capability subclass IVw and in woodland group 2w.

46—Smithton-Urban land complex, 0 to 1 percent slopes. This map unit consists of poorly drained, nearly level Smithton soil and areas of Urban land. Individual areas of this unit contain from 35 to 70 percent Smithton soils and 15 to 50 percent Urban land. Areas of the Smithton soils and Urban land are so intricately mixed or so small that mapping them separately was not practical at the scale selected for mapping.

Typically, Smithton soils have a surface layer of dark grayish brown sandy loam about 7 inches thick. The subsurface layer, to a depth of 17 inches, is gray sandy loam that has mottles in shades of brown and yellow. The subsoil is light gray sandy loam to 26 inches, light gray loam to 47 inches, and light gray silt loam to 72 inches. It is mottled in shades of yellow, brown, and red.

The Urban land part of this map unit is covered by streets, sidewalks, buildings, parking lots, shopping centers, industrial developments, and other structures that so obscure the soils that identification is not feasible.

These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of Dorovan, Escambia, Grady, Johnston, and Osier soils. Also included are areas that have been cut, filled, or graded. The cut and fill areas are mostly along Interstate 65.

Smithton soils are moderately slowly permeable and have moderate to high available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. These soils receive runoff from adjacent uplands, and water remains on the surface for several days except where artificially drained. The soils have a water table at or near the surface during the winter and spring.

Smithton soils have a fair to good potential for growing lawn grasses, flowers, gardens, trees, and shrubs when excess water is removed. Much of this map unit is artificially drained by systems of storm drains, gutters, underground tiles, and surface ditches.

Smithton soils have poor potential for most urban uses because of wetness. This limitation can be partially overcome with artificial drainage systems, but adequate drainage outlets are difficult to find in most areas.

Smithton soils are not assigned to a capability subclass, but are in woodland group 2w. Urban land is not assigned to a capability subclass or a woodland group.

47—Smithton-Benndale association, undulating. This map unit consists of poorly drained and well drained soils in a regular and repeating pattern on Coastal Plain uplands. The landscape is a series of broad, nearly level flats with narrow drainageways that are separated by low ridges with smooth side slopes. The poorly drained Smithton soils are on the broad, flat areas along drainageways and on toe slopes. The well drained Benndale soils are on side slopes and ridgetops. Slopes range from 0 to 8 percent. Mapped areas are irregular in shape and range from 100 to 1,000 acres. Individual areas of Benndale soils range from 10 to 25 acres, and areas of Smithton soils range from 40 to 200 acres.

Smithton soils and similar soils make up about 52 percent of the map unit. Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The subsurface layer, extending to a depth of 17 inches, is gray sandy loam that has mottles in shades of yellow and brown. The subsoil is light gray sandy loam to 26 inches; light gray loam to 47 inches; and light gray silt loam to 72 inches. It is mottled in shades of yellow, brown, and red.

Smithton soils are moderately slowly permeable and have moderate to high available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. These soils have a water table near the surface during winter and early spring and are subject to occasional flooding by runoff from adjacent uplands.

Benndale soils and similar soils make up about 21 percent of the map unit. Typically, the surface layer is dark gray sandy loam about 5 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 11 inches. The upper part of the subsoil, to 40 inches, is yellowish brown loam, and the lower part, to 72 inches, is yellowish brown clay loam that has mottles in shades of yellow, brown, and red.

Benndale soils are moderately permeable and have moderate available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The root zone is deep and easily penetrated by plant roots.

Minor soils make up about 27 percent of the map unit. They include the well drained Shubuta soils on ridgetops and side slopes; the moderately well drained to somewhat poorly drained Pactolus and Harleston soils on toe slopes; and the poorly drained and very poorly drained Bibb, Dorovan, Osier, and Pamlico soils on low flats and in narrow drainageways.

The potential of Smithton and Benndale soils for cultivated crops is poor to fair. The wetness of Smithton soil often delays tillage operations well into spring. Poor aeration in the root zone slows early root growth and may cause plants to be stunted. Benndale soils have fair potential for cultivated crops. Potential is somewhat reduced by the small size of most areas and by slope. Erosion is a moderate to severe hazard on areas that have slopes of more than 2 percent.

Most of the acreage in this map unit is woodland. Smithton soils have good potential for loblolly pine, slash pine, and sweetgum on areas with adequate surface drainage. The seasonal high water table restricts the use of equipment during the wet season, and the soils have a severe seedling mortality rate. Benndale soils have good potential for loblolly, longleaf, and slash pines. They have no significant limitations for woodland use or management.

This map unit has poor potential for most urban uses. Wetness of Smithton soils is a severe limitation for building site developments and for septic tank absorption fields. Benndale soils have slight limitations, but the small size of most areas restricts their use for large developments. Slopes of more than 4 percent are a moderate limitation for small commercial buildings.

Smithton soils are in capability subclass IVw and in woodland group 2w. Benndale soils are in capability subclass IIIe and in woodland group 2o.

48—Suffolk-Smithton association, gently undulating. This map unit consists of well drained and poorly drained soils in a regular and repeating pattern on Coastal Plain stream terraces and low uplands mainly in the northwestern part of the county along the Escatawpa River. The well drained Suffolk soils are in slightly higher positions than the poorly drained Smithton soils. Slope

ranges from 0 to 2 percent. Mapped areas are irregular in shape and range from 200 to over 1,000 acres. Individual areas of each soil range from about 5 to about 50 acres.

Suffolk soils and similar soils make up about 40 percent of the map unit. Typically, the surface layer is dark grayish brown sandy loam about 4 inches thick. The subsurface layer is yellowish brown sandy loam to a depth of 11 inches. The subsoil is brownish yellow sandy loam to 16 inches; yellowish brown sandy clay loam to 42 inches; and light yellowish brown sandy loam to 48 inches. The underlying material is yellow and white sand that extends to 66 inches.

Suffolk soils are moderately permeable and have moderate available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and the soil can be worked over a wide moisture range. The root zone is deep.

Smithton soils and similar soils make up about 29 percent of the map unit. Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The subsurface layer to a depth of 17 inches is gray sandy loam that has mottles in shades of brown and yellow. The subsoil is light gray sandy loam to 26 inches; light gray loam to 47 inches; and light gray silt loam to 72 inches. It is mottled in shades of yellow, brown, and red.

Smithton soils are moderately slowly permeable, and the available water capacity is moderate to high. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. These soils have a water table at or near the surface during winter and spring and are subject to occasional flooding by runoff from adjacent uplands.

Minor soils make up about 31 percent of the map unit. They include the well drained Troup soils and the moderately well drained Harleston and Izagora soils. Also included are small areas of the poorly drained and very poorly drained Bibb, Dorovan, and Pamlico soils in natural drainageways and depressions.

Suffolk soils have good potential for cultivated crops and pasture. Because of wetness, Smithton soils have poor potential for cultivated crops and fair potential for pasture.

Most of the acreage of this map unit is woodland. Suffolk soils have good potential for loblolly and slash pines. Smithton soils have good potential for these species and sweetgum on areas with adequate surface drainage. The use of equipment is severely restricted on Smithton soils by seasonal wetness, and the seedling mortality rate is severe.

This unit has fair potential for most urban uses. Suffolk soils have no significant limitations for building site developments or septic tank absorption fields. Smithton soils have severe limitations for most uses because of wetness.

Suffolk soils are in capability class I and in woodland group 2o. Smithton soils are in capability subclass IVw and in woodland group 2w.

49—Susquehanna-Harleston association, moderately undulating. This map unit consists of somewhat poorly drained and moderately well drained soils in a regular and repeating pattern on Coastal Plain uplands in the western part of the county. The somewhat poorly drained, clayey Susquehanna soils are on low ridgetops and upper side slopes. The moderately well drained, loamy Harleston soils are on middle and lower side slopes. Slope ranges from 2 to 8 percent. There is one delineation of 3,330 acres in this unit. Individual areas of each soil range from about 10 to 75 acres.

Susquehanna soils and similar soils make up about 56 percent of the map unit. Typically, the surface layer is dark gray loam about 3 inches thick. The subsurface layer is brown loam to about 9 inches. The upper part of the subsoil, to a depth of 13 inches, is yellowish red silty clay that has gray and red mottles. The middle part, to 16 inches, is mottled gray, red, and yellowish red silty clay loam. The lower part to 66 inches is light gray silty clay that has red and yellow mottles.

Susquehanna soils are very slowly permeable, and the available water capacity is high. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. The root zone is deep.

Harleston soils and similar soils make up about 32 percent of the map unit. Typically, the surface layer is very dark gray sandy loam about 3 inches thick. The subsurface layer is light yellowish brown sandy loam to about 10 inches. The upper part of the subsoil is light yellowish brown sandy loam to a depth of 22 inches and brownish yellow loam to 35 inches. It has mottles in shades of gray and yellow. The lower part, to 72 inches, is mottled gray, yellow, red, and brown loam and sandy clay loam.

Harleston soils are moderately permeable and have moderate available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. The root zone is deep and easily penetrated by plant roots. A water table is about 2 to 3 feet below the surface during the winter and early spring. Some areas of these soils are subject to very brief flooding during periods of unusually high rainfall.

Minor soils make up about 12 percent of the map unit. They include small areas of the well drained Troup and Suffolk soils and the poorly drained Smithton soils. Also included are areas of the poorly drained Bibb soils and the very poorly drained Pamlico soils in natural drainageways throughout the map unit.

The potential for cultivated crops is poor because of the irregular shape of individual soil areas, slope, and the erosion hazard. Erosion is a severe hazard on Susquehanna soils and a moderate hazard on Harleston soils. The potential for pasture is fair.

Most of this map unit is woodland. Potential of the soils is good for loblolly and slash pines. In addition, Harleston soils have good potential for sweetgum and American sycamore. The use of equipment is moderately restricted by the clayey nature of the Susquehanna soils and by the seasonal wetness of the Harleston soils.

This map unit has poor potential for most urban uses. The major limitations are the very slow permeability, low strength, and high shrink-swell potential of the Susquehanna soils and the wetness of Harleston soils. These limitations are difficult to overcome.

Susquehanna soils are in capability subclass IVe and in woodland group 3c. Harleston soils are in capability subclass IIe and in woodland group 2w.

50—Troup loamy sand, 0 to 5 percent slopes. This well drained, nearly level to gently sloping soil is on ridgetops of Coastal Plain uplands. Slopes are simple and convex. Individual areas are irregular in shape and range from 20 to over 1,000 acres.

Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 15 inches, brownish yellow loamy sand to 44 inches, and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

Permeability is rapid in the sandy layers and moderate in the subsoil. The available water capacity is low. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and this soil can be tilled over a wide moisture range. The root zone is deep.

Included with this soil in mapping are small areas of Bama, Benndale, Heidel, Pactolus, and Shubuta soils. Also included are soils that are similar to Troup soils except that they have a sandy surface layer 20 to 40 inches thick or they have more than 5 percent plinthite in the subsoil. Included soils make up 10 to 20 percent of this map unit, but individual areas are usually less than 5 acres.

This Troup soil has fair potential for cultivated crops and good potential for such deep rooted pasture and hay grasses as bahiagrass and bermudagrass. The low available water capacity is the major limitation. Also, plant nutrients are leached readily from the root zone. Erosion is a severe hazard on this soil in areas where runoff is concentrated.

Most of this Troup soil is woodland, and potential is good for longleaf, loblolly, and slash pines. The sandy nature of the soil is a moderate restriction for the use of equipment. The mortality rate of seedlings is moderate on Troup soil because of droughtiness.

This soil has good potential for most building site developments and for septic tank absorption fields. Cutbanks may cave where trenches are dug. Seepage is a severe limitation for sewage lagoons and for sanitary landfills.

This soil is in capability subclass IIIs and in woodland group 3s.

51—Troup loamy sand, 5 to 8 percent slopes. This well drained, sloping soil is on ridgetops and side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas range from 10 to 500 acres but are generally less than 100 acres.

Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 15 inches; brownish yellow loamy sand to 44 inches; and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

Permeability is rapid in the sandy layers and moderate in the subsoil. The available water capacity is low. This soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and the soil can be tilled over a wide moisture range. The root zone is deep.

Included with this soil in mapping are small areas of Benndale, Heidel, and Pactolus soils. Also included are soils that are similar to Troup soils except that they have a sandy surface layer 20 to 40 inches thick or they have more than 5 percent plinthite in the subsoil. Included soils make up 10 to 20 percent of this map unit, but individual areas are usually less than 5 acres.

This Troup soil has poor potential for cultivated crops because of low available water capacity and slope. Also, nutrients leach rapidly from the root zone. Erosion is a severe hazard on areas where runoff water is concentrated. Potential is good for such deep rooted pasture and hayland grasses as bahiagrass and bermudagrass (fig. 8).

Most of this Troup soil is woodland, and potential is good for longleaf, loblolly, and slash pines. The sandy nature of the soil is a moderate restriction to the use of equipment, and because of droughtiness, the seedling mortality rate is moderate on Troup soil.

Potential is good for building site developments and septic tank absorption fields. Cutbanks may cave where trenches are dug. Slope is a moderate limitation for small commercial buildings, but this can be overcome by proper engineering design. Seepage is a severe limitation for sewage lagoons and sanitary landfills.

This soil is in capability subclass IVs and in woodland group 3s.

52—Troup-Heidel complex, 8 to 12 percent slopes. This map unit consists of small areas of well drained

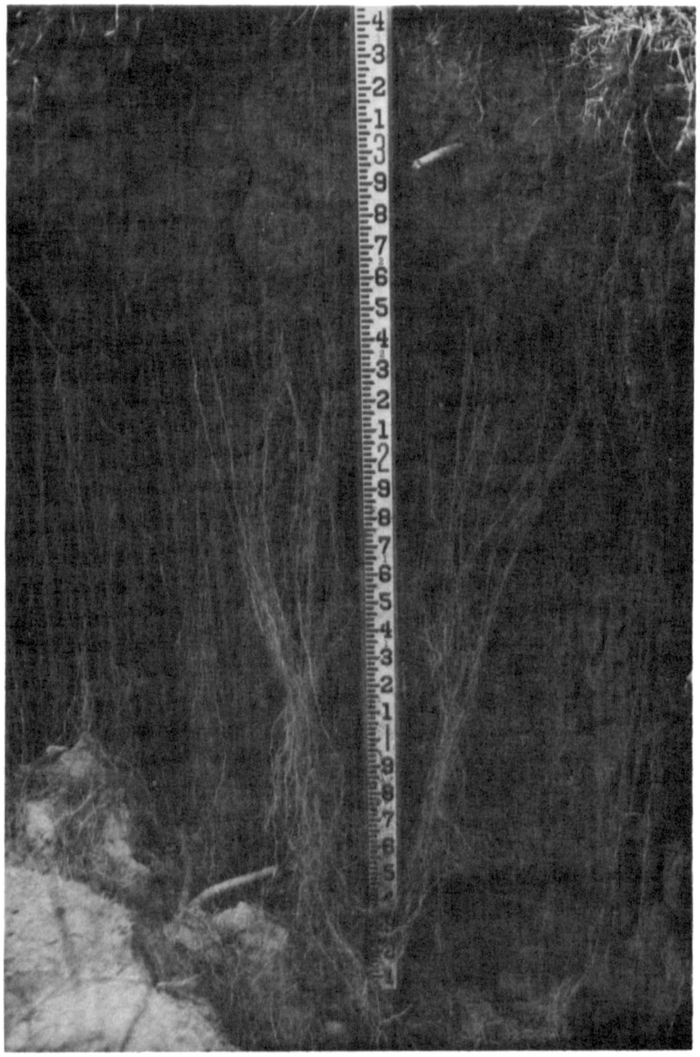


Figure 8.—Bahiagrass roots penetrate deep to obtain moisture and nutrients from Troup loamy sand, 5 to 8 percent slopes.

Troup and Heidel soils in areas that are so intermingled that mapping them separately was not practical at the scale selected for mapping. Areas of these soils are mostly long and narrow and are adjacent to streams and drainageways in the Coastal Plain uplands. Mapped areas are about 10 to 100 acres.

Troup loamy sand makes up about 50 percent of the map unit. Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 15 inches; brownish yellow loamy sand to 44 inches; and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

Permeability is rapid in the sandy layers and moderate in the subsoil of the Troup soil. The available water capacity is low. Natural fertility and organic matter content are low. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Tilth is good, and the soil can be tilled throughout a wide moisture range. The root zone is deep.

Heidel sandy loam makes up about 19 percent of the complex. Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil is reddish brown and yellowish red sandy loam that extends to a depth of 33 inches. The lower part is red sandy clay loam to 68 inches and red sandy loam to 92 inches.

Permeability and available water capacity are moderate in this Heidel soil. The soil is low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The soil has good tilth and can be worked throughout a wide moisture range. The root zone is deep.

Included in mapping are small areas of the poorly drained Bibb soils and the very poorly drained Johnston and Pamlico soils in or near natural drainageways. Also included are small areas of the well drained Benndale and Shubuta soils and the moderately well drained Notcher soils.

These Troup and Heidel soils have poor potential for cultivated crops and fair potential for pasture. Slope and the sandy nature of the Troup soil are the major limitations.

Most of the acreage of this map unit is woodland, and potential is good for loblolly, slash, and longleaf pines. The use of equipment is moderately restricted and the seedling mortality rate is moderate on the sandy Troup soil.

Potential is fair for most building site developments and for septic tank absorption fields. Slope is the main limitation. Seepage is a severe limitation for sewage lagoons and sanitary landfills.

The Troup soil is in capability subclass VIs and in woodland group 3s. The Heidel soil is in capability subclass VIe and in woodland group 2o.

53—Troup-Urban land complex, 0 to 8 percent slopes. This map unit consists of well drained, nearly level to sloping Troup soils and areas of Urban land. Individual areas of this unit contain from 45 to 70 percent Troup soils and 15 to 35 percent Urban land. Areas of the Troup soils and Urban land are so intricately mixed or so small that mapping them separately was not practical at the scale selected for mapping.

Typically, Troup soils have a surface layer of dark grayish brown loamy sand about 4 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 15 inches; brownish yellow loamy sand to 44 inches; and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

The Urban land part of this map unit is covered by streets, sidewalks, buildings, parking lots, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of Bama, Benndale, Bibb, Heidel, Johnston, and Pamlico soils. Also included are areas that have been cut, filled, and graded and small areas of Troup soils that have slopes of more than 8 percent.

Troup soils are rapidly permeable in the sandy layers and moderately permeable in subsoil. The available water capacity is low. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The root zone is deep.

Troup soils are used for building sites, lawns, gardens, and parks. These soils have good to fair potential for locally adapted grasses, flowers, vegetables, and shrubs. The soils are droughty, and supplemental water must be added to maintain growth and beauty of lawn grasses and ornamentals. The soils are subject to severe erosion when bare, particularly on areas where runoff is concentrated. The potential for recreational development is fair.

Troup soils have good potential for most urban uses. Areas of these soils that have slopes of more than 4 percent have a moderate limitation for small commercial buildings, but this can be overcome by proper engineering design. Cutbanks cave when excavations are made in the soil because of its sandy nature. Septic tank absorption fields function well. Seepage is a severe limitation for sewage lagoons and sanitary landfills.

These Troup soils are not assigned to a capability subclass; the woodland group is 3s. Urban land is not assigned to a capability subclass or a woodland group.

54—Troup-Urban land complex, 8 to 12 percent slopes. This map unit consists of well drained, strongly sloping Troup soils and areas of Urban land. Individual areas of this unit contain from 45 to 65 percent Troup soils and 15 to 30 percent Urban land. Areas of the Troup soils and Urban land are so intricately mixed or so small that mapping them separately was not practical at the scale selected for mapping.

Typically, Troup soils have a surface layer of dark grayish brown loamy sand about 4 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 15 inches; brownish yellow loamy sand to 44 inches; and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

The Urban land part of this map unit is covered by streets, sidewalks, buildings, parking lots, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because these soils are covered.

Included in mapping are small areas of Benndale, Bibb, Heidel, Johnston, and Pamlico soils. Also included are areas that have been cut, filled, and graded, small areas of Troup soils that have slopes less than 8 percent, a few areas that have slopes of more than 12 percent.

Troup soils are rapidly permeable in the sandy layers and moderately permeable in the subsoil. The available water capacity is low. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. The root zone is deep.

Troup soils are used for building sites, lawns, gardens, and parks. These soils have good to fair potential for most locally adapted grasses, flowers, vegetables, and shrubs. The soils are droughty, and supplemental water must be added to maintain lawn grasses and ornamentals. Troup soils are subject to severe erosion when bare, particularly on areas where runoff is concentrated. The potential for most recreational developments is fair.

Troup soils have fair potential for most building site developments and for septic tank absorption fields. Slope is the main limitation for these uses. Cutbanks cave when excavations are made in this soil because of its sandy nature. Seepage is a severe limitation for sewage lagoons and sanitary landfills.

Troup soils are not assigned to a capability subclass, but the woodland group is 3s. Urban land is not assigned to a capability subclass or a woodland group.

55—Troup-Benndale association, rolling. This map unit consists of well drained soils in a regular and repeating pattern on Coastal Plain uplands. The landscape is a series of narrow to moderately wide ridgetops, long, convex side slopes, and mostly narrow drainageways. Troup soils are mainly on narrow ridgetops and on moderately steep side slopes. Benndale soils are mainly on broader ridgetops and the longer, more gently sloping side slopes. Slopes range from 5 to 17 percent. Mapped areas are irregular in shape and range from 300 to 10,000 acres. Individual areas of each soil range from 50 to over 300 acres.

Troup soils and similar soils make up about 37 percent of the map unit. Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layers are yellowish brown loamy sand to a depth of 15 inches; brownish yellow loamy sand to 44 inches; and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

Troup soils are rapidly permeable in the sandy layers and moderately permeable in the subsoil. The available water capacity is low. The soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. The root zone is deep.

Benndale soils and similar soils make up about 24 percent of the map unit. Typically, the surface layer is dark gray sandy loam about 5 inches thick. The subsurface layer is light yellowish brown sandy loam to a depth of 11 inches. The upper part of the subsoil, to 40 inches,

is yellowish brown loam, and the lower part, to 72 inches, is yellowish brown clay loam that has mottles in shades of yellow, brown, and red.

Benndale soils are moderately permeable and have moderate available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. The root zone is deep.

Minor soils make up about 39 percent of the map unit. They include the well drained Bama and Shubuta soils, the moderately well drained Harleston soils, and the somewhat poorly drained Escambia soils on uplands. Also included are areas of poorly drained Osier and Smithton soils and very poorly drained Pamlico soils in or near drainageways.

Potential of these Troup and Benndale soils is poor for cultivated crops. Slope and the low available water capacity of the Troup soil are the main limitations. Erosion is a severe hazard except on the more gently sloping ridgetops. Several deep and actively eroding gullies are in this map unit. The potential is fair for such deep rooted pasture grasses as bahiagrass and bermudagrass.

Most of the acreage is woodland. Potential is good for loblolly, slash, and longleaf pines. The seedling mortality rate is moderate on Troup soils, and the use of equipment is moderately restricted. These are the only significant limitations for woodland use and management.

These soils have fair potential for most building site developments and for septic tank absorption fields. Slopes are a moderate to severe limitation for most uses, but this can be overcome by good design and construction measures. The sandy Troup soils tend to cave when excavations are made.

Troup soils are in capability subclass VIs and in woodland group 3s. Benndale soils are in capability subclass IVe and in woodland group 2o.

56—Troup-Heidel association, undulating. This map unit consists of well drained soils in a regular and repeating pattern on broad, nearly level ridgetops and gently sloping to sloping side slopes of Coastal Plain uplands. The Troup soils are mostly on side slopes, and the Heidel soils are mostly on nearly level ridgetops. Slopes range from 0 to 8 percent. Mapped areas are irregular in shape and range from 200 to 3,000 acres. Individual areas of each soil range from 50 to 250 acres.

Troup soils and similar soils make up about 63 percent of the map unit. Typically, the surface layer is dark grayish brown loamy sand about 4 inches thick. The subsurface layers are yellowish brown loamy sand to a depth of 15 inches; brownish yellow loamy sand to 44 inches; and reddish yellow loamy sand to 69 inches. The subsoil is red sandy loam to 86 inches.

Troup soils are rapidly permeable in the sandy layers and moderately permeable in the subsoil. The available water capacity is low. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout. Tilth is good, and the soil can be worked throughout a wide moisture range. The root zone is deep.

Heidel soils and similar soils make up about 25 percent of the map unit. Typically, the surface layer is dark grayish brown sandy loam about 7 inches thick. The upper part of the subsoil is reddish brown and yellowish red sandy loam that extends to a depth of 33 inches. The lower part is red sandy clay loam to 68 inches and red sandy loam to 92 inches.

Heidel soils are moderately permeable and have moderate available water capacity. These soils are low in natural fertility and organic matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. These soils have good tilth and can be worked throughout a wide moisture range. The root zone is deep.

Minor soils make up about 12 percent of the map unit. They include small areas of the well drained Bama soils and the moderately well drained Malbis soils on ridgetops and upper side slopes. Also included are small areas of the moderately well drained to somewhat poorly drained Pactolus soils in or near the heads of natural drainageways.

These Troup and Heidel soils have fair to good potential for cultivated crops. The low available water capacity of the Troup soil is a moderate limitation. Erosion is a moderate hazard on areas of soils that have slopes of more than 2 percent. The potential is good for such deep rooted pasture grasses as bahiagrass and bermudagrass.

Most of the acreage is woodland. Potential is good for loblolly, slash, and longleaf pines. The use of equipment is moderately restricted by the sandy nature of Troup soils. The seedling mortality rate is moderate on Troup soils because of droughtiness. These are the only significant limitations for woodland use and management.

Potential is good for most building site developments and for septic tank absorption fields. Slopes of more than 4 percent are a moderate limitation for small commercial buildings. Cutbanks cave when trenches are dug in the sandy Troup soils.

Troup soils are in capability subclass IVs and in woodland group 3s. Heidel soils are in capability subclass IIe and in woodland group 2o.

57—Urban land. This map unit is made up of extensively built-up areas; 85 to 100 percent of each mapped area is either covered by structures or has been disturbed by cutting and filling.

Most of these areas are nearly level to sloping. Storm drain systems usually control runoff on the paved areas, but erosion on some of the exposed cuts or fill areas is severe.

Included in mapping are small areas of moderately built-up areas where structures cover only 50 to 85 per-

cent of the surface. Also included are remnants of undisturbed soils on vacant lots and areas where the natural soil is covered by fill material. Included areas make up as much as 15 percent of the unit.

The soils making up the unit have been so altered or obscured that they cannot be classified.

Urban land is not assigned to a capability subclass or a woodland group.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank disposal systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops and pasture and woodland; as sites for buildings, highways and other transportation systems, sanitary facilities, and parks and other recreation facilities; and for wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area and on the environment. Productivity and the environment are closely related to the nature of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, and topsoil. Other information indicates the presence of wetness or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

Lewis D. Williams, conservation agronomist, Soil Conservation Service, helped prepare this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the predicted yields of the main crops and hay and pasture plants are presented for each soil map unit.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

The Alabama Conservation Needs Inventory (*1*) shows that in 1967 there were about 68,500 acres of cropland and 37,500 acres of pastureland in Mobile County. Acreage for cultivated crops has increased. In 1975, the field crops included 41,800 acres of soybeans, 9,700 acres of corn, 500 acres of grain sorghum, and 4,700 acres of wheat. Specialty crops in 1975 included 12,500 acres of orchard crops and grapes, 4,000 acres of watermelon, 1,800 acres of Irish potatoes, 300 acres of sweet corn, and 100 acres of snap beans (*2*).

Mobile County has good potential for increased food production. Almost 140,000 acres of good potential cropland is being used for pasture and woodland in the survey area. In addition to this reserve production land, food production could be increased by using the latest crop production technology on all cropland in the county. Information in this soil survey can be used as a general guide in applying such technology.

Soil erosion is the major concern on about half of the cropland in Mobile County. If slope is more than 2 percent, erosion is a hazard. Bama, Benndale, Heidel, Malbis, and Notcher soils, for example, have slopes of 2 to 8 percent and are subject to sheet erosion. The deep sandy Alaga and Troup soils are subject to both sheet and gully erosion.

Loss of the surface layer through erosion by wind and running water is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of

the surface layer is especially damaging on soils that have a natural restrictive layer in the subsoil, such as Malbis and Notcher soils, that limits the depth of the root zone. Second, soil erosion on farmland may result in sediment moving into streams. Control of erosion minimizes the pollution of streams by sediment and maintains the quality of water for municipal use, for recreation, and for fish and wildlife.

Erosion control provides protective surface cover, reduces runoff, and increases infiltration. A cropping system that keeps vegetative cover on the soil can hold erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land, provide some nitrogen, and improve tilth for cultivated crops.

Minimum tillage and leaving crop residue on the surface will help increase infiltration and reduce the hazards of runoff and erosion (fig. 9). These practices can be adopted to most soils of the survey area. No-tillage for soybeans and corn, planted in heavy residues, is effective to control erosion on sloping cropland. No-tillage can be used on soils with topographic conditions unfavorable for terracing and contour farming.

Terraces and diversions reduce the length of slope and reduce runoff and erosion. They are most practical on deep, well drained soils, such as Bama, Benndale, Heidel, Malbis, and Notcher soils, that have uniform slopes. Alaga and Troup soils are not suitable for terracing because the sandy soils are subject to severe erosion when water is concentrated on their surfaces. Grassed waterways or underground tile outlets are essential to safely drain concentrated water from soils where terraces and diversions are installed.

Figure 9.—The residue from this corn crop will be left as winter ground cover on Bama sandy loam, 0 to 2 percent slopes.

Contour farming reduces erosion on clean cultivated cropland. It is well suited to soils with smooth and uniform slopes, including most areas of the sloping Bama, Benndale, Heidel, Malbis, and Notcher soils.

Soil blowing is often a hazard on most upland soils, especially in early spring when plants are small (fig. 10). The problem is most severe on seedbeds. Soil blowing can damage these soils if winds are strong and the soils are dry and without plant cover or surface mulch. Maintaining plant cover, surface mulch, or rough surfaces with proper tillage minimizes soil blowing. Strips of close growing crops are effective windbreaks.

Information for the design of erosion control measures for each kind of soil is available in local offices of the Soil Conservation Service.

Soil drainage is the major management concern on about one-fourth of the acreage used for crops and pasture in the survey area. Some soils are naturally too wet for the production of crops and pasture plants. These soils are the poorly drained Bayou, Bethera, Grady, Osier, and Smithton soils. Also in this category are the organic Dorovan, Lafitte, and Pamlico soils. On other soils, drainage would increase crop and pasture production. These include the somewhat poorly drained Escambia and Robertsdale soils and the moderately well drained Harleston, Izagora, and Saucier soils.

The design of both surface and subsurface drainage systems varies with the kind of soil. The most common system of drainage is surface ditches. Underground tile systems do not interfere with tillage operations and have been used more in recent years. Drainage systems should be planned and designed by those trained for drainage survey and design. Drains are more closely spaced in slowly permeable soils than in more permeable soils. Finding adequate outlets for both drainage systems is difficult in many areas of the county.

Organic soils oxidize and subside when the pore space is filled with air; therefore, special drainage systems are needed to control the depth and the period of drainage. Keeping the water table at the level required by crops during the growing season and raising it to the surface during other parts of the year minimize the oxidation and subsidence of organic soils. Information on drainage design for each kind of soil is available in the local office of the Soil Conservation Service.

Soil fertility is naturally low in most soils on uplands in the survey area.

Soils on uplands and terraces are strongly acid or very strongly acid in their natural state and require lime to raise the pH level for good plant growth. Available phos-

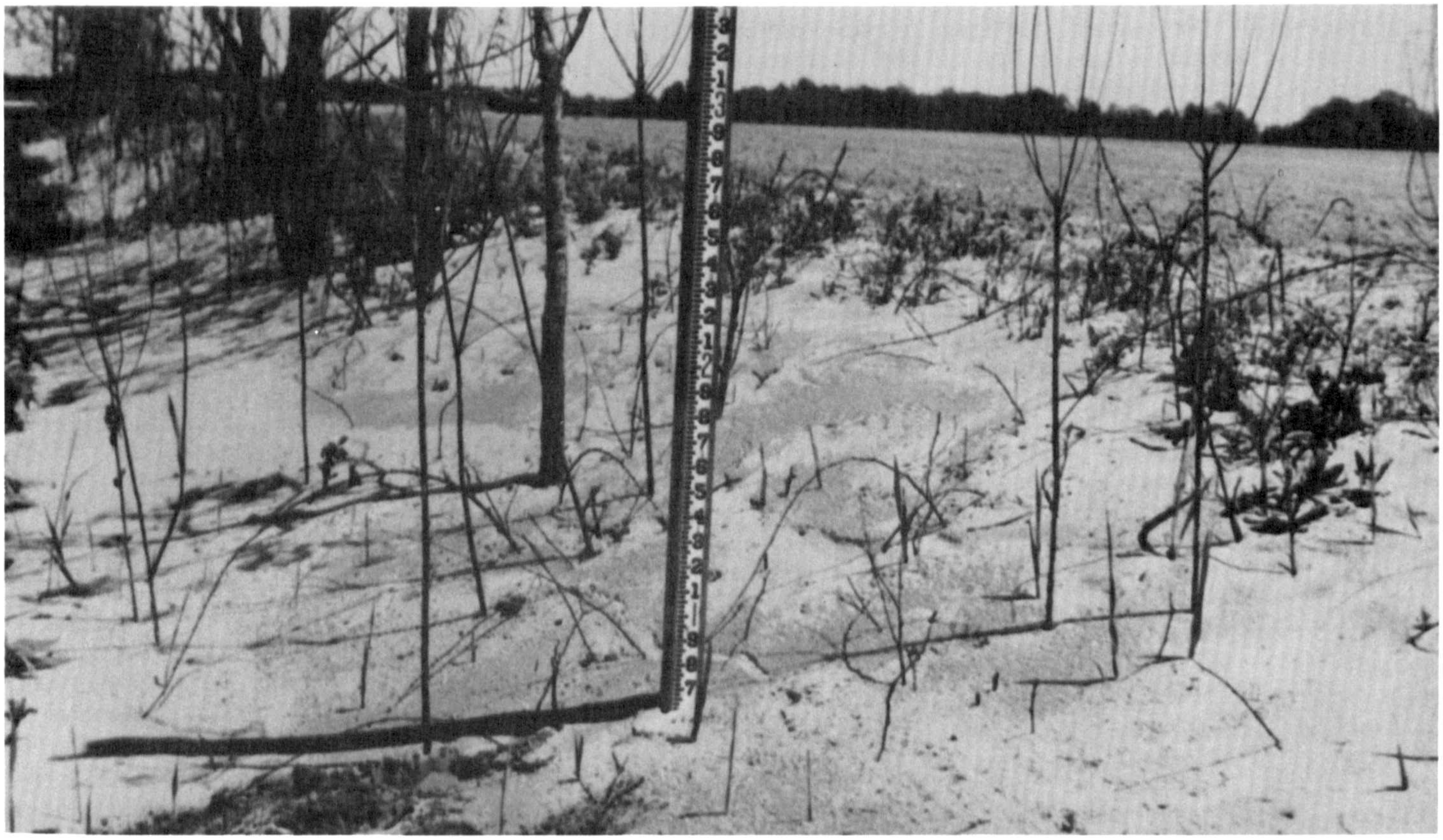


Figure 10.—Sediment accumulated in field border from soil blowing from a nonprotected area of Heidel sandy loam, 0 to 2 percent slopes.

phorus and potash levels are naturally low in most of these soils. On all soils, additions of lime and fertilizer should be based on results of soil tests and on the need of the crop for high yields. Leaching is a problem on such sandy soils as Alaga and Troup soils. When high rates of nitrogen are used on these soils, split applications are practical.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils that have good tilth are granular and porous.

Most of the soils used for crops in the survey area have a surface layer of sandy loam that is light in color and low in content of organic matter. Regular additions of crop residue, manure, and other organic material can help improve soil structure and increase the water infiltration rate and available water capacity of these soils.

Fall plowing is not a good practice on sloping upland soils that are subject to erosion. Formation of plowpans is common on cultivated soils that are tilled with heavy equipment. These pans occur slightly below the depth of tillage. Deep chiseling and in-row subsoiling, which penetrate the pan, provide a favorable condition for crop root penetration of the soil.

Field crops suited to the soils and climate of the survey area include soybeans and corn, Irish potatoes, and specialty crops. Also, these soils and climate are suitable for peanuts and most vegetables if economic conditions are favorable.

Wheat and rye are the leading small grain crops. Oats are well suited to the soils, and grass seed could be produced from bahiagrass. Crimson clover, white clover, Yuchi clover, ball clover, and other legumes will grow on most soils if lime is applied. Bahiagrass, common bermudagrass, and improved bermudagrasses are the main grasses grown for pasture and hay. Dallisgrass can be grown on the more fertile terraces and bottom lands. Tall fescue is not well suited to the climatic conditions of the survey area; however, it can be grown on the more clayey soils when properly managed.

Specialty crops grown commercially in the survey area are vegetables, pecans, and nursery plants. These crops include small acreages of melons, sweet corn, tomatoes, cabbage, snap beans, greens, cucumbers, and other vegetables and small fruits. In addition, large areas can be used for other specialty crops such as blueberries and grapes.

Most of the well drained and moderately well drained soils in the survey area are suitable for orchards and nursery plants.

Latest information and suggestions for growing specialty crops can be obtained from the local offices of the Cooperative Extension Service and the Soil Conservation Service.

Pasture and hay crops are important in the survey area (fig. 11). Several practices are needed on all soils that are used for pasture and hay production. They include proper grazing or cutting heights, controlling weeds, proper fertilizing, rotational grazing, and scattering animal manure. Overgrazing and low fertility are the two main problems associated with pasture production. Both problems result in weak plants and poor stands that are quickly infested with weeds. To prevent weeds from becoming established, maintain a good dense ground cover of suitable pasture species.

Farming and other land uses are competing with urban development for large areas of the survey area. About 100,000 acres of the survey area was urban or built-up land in 1967, according to the Conservation Needs Inventory (*1*). Much of this acreage was suitable for cropland. Each year additional land is being developed for urban uses in Mobile, Semmes, Prichard, Theodore, and other communities in the survey area.

In general, the soils in the survey area that are well suited to crops are also well suited to urban development. The data about specific soils in this soil survey can be used in planning land use patterns. Potential for farm production should be weighed against soil limitations and potential for nonfarm development.

Figure 11.—Alicia bermudagrass grown for hay on Troup loamy sand, 0 to 5 percent slopes.

In some areas, however, soils are well suited to farming but less suitable for nonfarm development. These areas are identified as map units 4 and 5 on the general soil map at the back of this publication. In these areas the dominant soils are Izagora, Suffolk, Bethera, Notcher, Saucier, and Malbis soils, nearly all of which are wet and have hazards for nonfarm development. Many areas of these soils have been drained and are suitable for crops.

If adequately drained, organic soils in portions of map unit 3 and in scattered pockets in other map units are uniquely suited to vegetables and other specialty crops. They also provide good habitat for wetland wildlife. They are poorly suited to urban development and to most other uses.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. A few farmers may be obtaining average yields higher than those shown in table 6.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

The estimated yields reflect the productive capacity of the soils for each of the principal crops. Yields are likely to increase as new production technology is developed.

The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not included because the acreage of these crops is small. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the management concerns and productivity of the soils for these crops.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to horticultural and other specialty crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forest trees or for engineering purposes.

In the capability system, all kinds of soil are grouped at two levels: capability class and subclass. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability subclass is identified in the description of each soil map unit in the section "Soil maps for detailed planning."

Woodland management and productivity

Jerry L. Johnson, state staff forester, Soil Conservation Service, helped prepare this section.

Forest production makes a significant contribution to the economy of Mobile County. Mobile County has 522,900 acres of commercial forest land, which makes up about 65 percent of the total land area in the county. Forest acreage decreased 10 percent from 1963 to 1972. This decrease was mostly due to conversions to cropland and urban or built-up areas. Nonindustrial private landowners own about 85 percent of the commercial forest land in Mobile County. Industrial owners have 50,400 acres, or approximately 10 percent, of the forest land. The remaining 5 percent is public forest land (*8*).

Forest types located in Mobile County are 201,600 acres of longleaf-slash pine, 31,500 acres of loblolly-shortleaf pine, 126,000 acres of oak-pine, and 81,900 acres of oak-gum-cypress (*8*). Many acres of upland hardwood sites are better suited for pines. Pines generally grow better than hardwoods on most upland sites. Hardwoods generally grow best on bottom land sites, although many of these sites are well suited to pines.

Good stands of merchantable timber are found in the county. Most of the soils have a high potential for trees and have a site index of 90 for loblolly and slash pines. Less than 20 percent of the forest acreage is considered moderately productive. Moderately productive soils have an average site index of 70 for loblolly pines (*12*).

The forested area in Mobile County includes 126,000 acres of sawtimber, 126,000 acres of poletimber, 252,000 acres of seedlings and saplings, and 18,900 acres of nonstocked areas. Nonstocked lands are areas which are less than 16.7 percent stocked with trees (*8*).

In the county, there are 20 wood-processing plants that employ more than 5,000 people (*4*) (*3*).

Table 7 contains information useful to woodland owners or forest managers planning use of soils for

wood crops. Map unit symbols for soils suitable for wood crops are listed, and the ordination symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: x, w, t, d, c, s, f, and r.

In table 7 the soils are also rated for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings. Plant competition is not considered in the ratings. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Considered in the ratings of *windthrow hazard* are characteristics of the soil that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate*, that some trees are blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Engineering

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this information are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers.

The ratings in the engineering tables are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of

soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 8 shows, for each kind of soil, the degree and kind of limitations for building site development; table 9, for sanitary facilities; and table 11, for water management. Table 10 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

Some of the terms used in this soil survey have a special meaning in soil science. Many of these terms are defined in the Glossary.

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping are indicated in table 8. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are made for pipelines, sewerlines, communications and power transmission lines, basements, open ditches, and cemeteries. Such digging or trenching is influenced by soil wetness caused by a seasonal high water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and the presence of very firm and dense soil layers. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is given, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 8 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Slope is also an important consideration in the choice of sites for these structures and was considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 8 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, and shrink-swell potential are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, and depth to very compact layers affect stability and ease of excavation.

Lawns and landscaping require soils that are suitable for the establishment and maintenance of turf for lawns and ornamental trees and shrubs for landscaping. The best soils are firm after rains, are not dusty when dry, and absorb water readily and hold sufficient moisture for plant growth. The surface layer should be free of stones. If shaping is required, the soils should be thick enough over hardpan to allow for necessary grading. In rating the soils, the availability of water for sprinkling is assumed.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 9 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required. Soil suitability is rated by the terms *good*, *fair*, or *poor*, which, respectively, mean about the same as the terms *slight*, *moderate*, and *severe*.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, and susceptibility to flooding. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very high in content of organic matter are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 9 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 10 by ratings of good, fair, or poor. The texture, thickness, and organic matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 14 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor.*

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 10 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 11 the soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other

layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 12 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 9, and interpretations for dwellings without basements and for local roads and streets, given in table 8.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

Robert E. Waters, biologist, Soil Conservation Service, helped prepare this section.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 13, the soils in Mobile County are rated according to their potential to produce the elements of

wildlife habitat and as habitat for the three general kinds of wildlife in the county. This information in table 13 can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat and habitat for the kind of wildlife is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat and habitat for the kind of wildlife can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated habitat element and habitat for the kind of wildlife. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

The elements of wildlife habitat are briefly described in the following paragraphs.

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples are corn, soybeans, wheat, sorghums, oats, barley, millet, cowpeas, and sunflower.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are tall fescue, bahiagrass, bermudagrass, dallisgrass, johnsongrass, lovegrass, lespedezas, clover, and vetch.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are dewberry, blackberry, crotons, pokeweed, partridgepeas, crabgrass, and paspalums.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of hardwood trees are oaks, yellow-poplar, sweetgum, dogwood, hickories, beech, and hackberry.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pines, cypress, and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged and floating aquatics. They produce food or cover for wildlife. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweeds, wild millets, rushes, sedges, reeds, and cattail.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams, levees, or water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed.

The three general kinds of wildlife in the county are briefly described in the following paragraphs.

Openland wildlife are birds and mammals of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. Examples are bobwhite quail, mourning dove, cottontail rabbit, and red fox. Habitat elements of most importance to openland wildlife are grain and seed crops, grasses and legumes, and wild herbaceous plants.

Woodland wildlife are birds and mammals of areas covered by either hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. Examples are wild turkey, deer, squirrels, woodcock, gray fox, raccoon, warblers, thrushes, vireos, and woodpeckers. Habitat elements of most importance to woodland wildlife are hardwood trees, coniferous plants, and wild herbaceous plants.

Wetland wildlife are birds, mammals, and other vertebrates of marshy, swampy, or open shallow water areas. Examples are ducks, geese, herons, shore birds, rails, kingfishes, muskrat, mink, beaver, otter, and turtles. Habitat elements of most importance to wetland wildlife are wetland plants and shallow water areas.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present data about pertinent soil and water features, engineering test data, and data obtained from physical and chemical laboratory analyses of soils.

Engineering properties

Table 14 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 14 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 14 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*6*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*5*).

The *Unified* system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested in the survey area, with group index numbers in parentheses, is given in table 18. The estimated classification, without group index numbers, is given in table 14. Also in table 14 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis

of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted.

Physical and chemical properties

Table 15 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment. The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.43. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Soil and water features

Table 16 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or soils that have moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rains or after snow melts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding; and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Physical and chemical analyses of selected soils

The results of physical and chemical analysis of several typical pedons of the survey area are given in table 17. The data presented are for samples from soil series that are important in the survey area. All samples were collected from carefully selected sites that are typical of the series and discussed in the section "Soil series and morphology." The soil samples were analyzed by the Agronomy and Soils Mineralogy Laboratory, Auburn University.

Extractable bases, extractable acidity, and base saturation were determined after the method of Hajek, Adams, and Cope (*7*).

Most determinations, except those for grain-size analysis, were made on soil material smaller than 2 millimeters in diameter. All capacity measurements are reported on an oven-dry basis. The methods that were used in obtaining the data are indicated in the list that follows. The codes, in parentheses, refer to published methods codes (*11*).

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).
Reaction (pH)—1:1 water dilution (8C1a).
Cation-exchange capacity—sum of cations (5A3a).

Engineering test data

The results of analyses of engineering properties of several typical soils of the survey area are given in table 18.

The data presented are for soil samples that were collected from carefully selected sites. The soil profiles sampled are typical of the series discussed in the section "Soil series and morphology." The soil samples were analyzed by the State of Alabama, Highway Department Soils Laboratory.

The methods used in obtaining the data are listed by code in the next paragraph. Most of the codes, in parentheses, refer to the methods assigned by the American Association of State Highway and Transportation Officials. The codes for shrinkage and Unified classification are those assigned by the American Society for Testing and Materials.

The methods and codes are AASHTO classification (M-145-66); Unified classification (D-2487-66T); mechanical analysis (T88-57); liquid limit (T89-60); plasticity index (T90-56); and moisture-density, method A (T99-57).

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*10*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or map units, of each soil series are described in the section "Soil maps for detailed planning."

Alaga series

The Alaga series consists of somewhat excessively drained, rapidly permeable soils that formed in sandy marine sediments. These soils are on terraces of the Coastal Plain. Slope is dominantly less than 2 percent but ranges up to 5 percent.

Alaga soils are geographically associated with the Bethera, Harleston, Izagora, and Smithton soils. Bethera soils have clayey control sections. Harleston and Smithton soils have coarse-loamy control sections. Izagora soils have fine-loamy control sections.

Typical pedon of Alaga loamy sand, in an area of Alaga-Harleston association, undulating, is near Satsuma, 1,000 feet south and 280 feet east of the NW corner, NE1/4NW1/4 sec. 23, T. 2 S., R. 1 W.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; medium acid; clear wavy boundary.

C1—5 to 12 inches; brown (10YR 5/3) loamy sand; single grained; very friable; medium acid; gradual wavy boundary.

C2—12 to 24 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; strongly acid; gradual wavy boundary.

C3—24 to 50 inches; yellowish brown (10YR 5/6) loamy sand; few medium distinct very pale brown (10YR 7/3) clean sand grains; single grained; loose; strongly acid; gradual wavy boundary.

C4—50 to 65 inches; brownish yellow (10YR 6/6) loamy sand; common medium very pale brown (10YR 7/3) clean sand grains and few medium distinct strong brown (7.5YR 5/6) mottles; single grained; loose; very strongly acid; gradual wavy boundary.

C5—65 to 80 inches; very pale brown (10YR 7/4) sand; many coarse faint very pale brown (10YR 8/3) mottles; many pockets or strata of strong brown loamy sand 1/8 to 1/2 inch thick and 1 to 6 inches apart; single grained; loose; very strongly acid.

Soil depth is over 80 inches. Reaction ranges from medium acid to very strongly acid.

The A horizon is less than 6 inches thick in most pedons. It has hue of 10YR, value of 3 or 4, and chroma of 2.

The upper C horizons have hue of 10YR, value of 5 or 6, and chroma of 3 through 6. Texture is loamy sand. The lower C horizons have hue of 10YR, value of 5 through 7, and chroma of 4 through 8. Texture ranges from sand to loamy sand. These horizons have mottles in shades of yellow and brown.

Annemaine series

The Annemaine series consists of moderately well drained, slowly permeable soils that formed in loamy and sandy marine sediments. These soils are on terraces of the Coastal Plain. These soils have a seasonal high water table 1 1/2 to 2 1/2 feet below the surface during winter. Slopes are dominantly 5 to 8 percent.

Annemaine soils are geographically associated with the Bethera and Izagora soils. Bethera soils are in slightly depressional areas and have dominant chroma of 2 or less in the Btg horizons. Izagora soils have fine-loamy control sections.

Typical pedon of Annemaine sandy loam, in an area of Izagora-Annemaine association, moderately undulating, is 2,800 feet south and 2,200 feet east of the NW corner of sec. 6, T. 2 N., R. 1 E.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; friable; many fine roots; very strongly acid; clear wavy boundary.

A2—3 to 7 inches; light yellowish brown (10YR 6/4) loam; weak medium granular structure; friable; many fine roots; strongly acid; clear wavy boundary.

B21t—7 to 11 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; friable; few fine roots; few thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—11 to 20 inches; yellowish red (5YR 4/8) clay; weak medium subangular blocky structure; firm; thin patchy clay films on faces of most peds; strongly acid; gradual wavy boundary.

B23t—20 to 31 inches; yellowish red (5YR 5/6) clay; few medium distinct red (2.5YR 4/6) and common medium distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B24t—31 to 42 inches; mottled light yellowish brown (2.5Y 6/4), gray (10YR 6/1), yellowish brown (10YR 5/6), strong brown (7.5YR 5/8), and yellowish red

(5YR 5/6) clay; few pockets of sandy clay loam; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of some peds; very strongly acid; gradual wavy boundary.

B3—42 to 54 inches; strong brown (7.5YR 5/6) sandy clay loam; few fine distinct light gray (10YR 6/1) and very pale brown (10YR 7/3) mottles; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.

C1—54 to 66 inches; strong brown (7.5YR 5/6) loamy sand; common medium distinct yellow (10YR 7/6) mottles; single grained; friable; very strongly acid; abrupt wavy boundary.

C2—66 to 74 inches; strong brown (7.5YR 5/6) loamy sand; common thin strata of very pale brown (10YR 7/4) sand; single grained; loose; very strongly acid.

Solum thickness ranges from 40 to 60 inches. Reaction is strongly acid or very strongly acid.

The A1 horizon has hue of 10YR, value of 3 through 5, and chroma of 2. The A2 horizon, where present, has hue of 10YR, value of 6, and chroma of 3 or 4. Texture is sandy loam or loam.

The upper part of the B2t horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. It has mottles in shades of gray, yellow, and brown. The lower part of the B2t horizon is mottled in shades of gray, yellow, brown, and red. Texture is clay loam or clay.

The B3 horizon has hue of 7.5YR or 5YR, value of 5, and chroma of 6 or 8. It has mottles in shades of gray, yellow, and brown. Texture is sandy clay loam or loam.

The C horizon is strong brown mottled with shades of yellow and brown.

Axis series

The Axis series consists of very poorly drained, moderately permeable soils that formed in thick loamy sediments. These soils are on tidal flats adjacent to the Gulf Coast Flatwoods. These soils are flooded with tide waters each day. The water table fluctuates with the tide. Slope ranges from 0 to 1 percent.

Axis soils are geographically associated with the Bayou, Dorovan, Johnston, Lafitte, and Pamlico soils. Bayou soils have argillic horizons. Dorovan, Lafitte, and Pamlico soils have histic epipedons. Johnston soils have thicker, dark colored surface layers and are on slightly higher positions than the Axis soils.

Typical pedon of Axis mucky sandy clay loam, 0 to 1 percent slopes, is 2,300 feet west and 1,200 feet south of the NE corner of sec. 31, T. 7 S., R. 4 W.

A11—0 to 7 inches; very dark grayish brown (10YR 3/2) mucky sandy clay loam; massive; hard, friable; many fine and medium roots; mildly alkaline, very strongly acid when dry; gradual wavy boundary.

A12—7 to 12 inches; very dark gray (10YR 3/1) sandy loam; massive; hard, friable; common fine and medium roots; mildly alkaline, medium acid when dry; clear wavy boundary.

C1g—12 to 20 inches; dark gray (10YR 4/1) sandy loam; few medium faint light brownish gray (10YR 6/2) mottles; massive; friable; few fine and medium roots; mildly alkaline, extremely acid when dry; clear wavy boundary.

C2g—20 to 40 inches; light gray (10YR 6/1) sandy loam; common medium distinct light olive brown (2.5Y 5/4) and few medium distinct olive (5Y 4/4) mottles; massive; friable; few medium roots; moderately alkaline, extremely acid when dry; gradual wavy boundary.

C3g—40 to 51 inches; light gray (5Y 6/1) sandy loam; common medium faint gray (10YR 5/1) and few medium distinct light olive brown (2.5Y 5/4) mottles; massive; friable; neutral, extremely acid when dry; gradual wavy boundary.

C4g—51 to 57 inches; light gray (5Y 6/1) sandy loam, few medium faint gray (10YR 5/1) mottles; massive; friable; neutral, extremely acid when dry; gradual wavy boundary.

C5g—57 to 71 inches; light gray (5Y 6/1) sandy loam with pockets of clay loam; massive; friable, slightly sticky; neutral.

Reaction ranges from slightly acid to moderately alkaline.

The A11 horizon is less than 8 inches thick in most pedons but ranges up to 15 inches in thickness. It has hue of 10YR, 2.5Y, or 5Y, value of 3, and chroma of 1 or 2. Texture is mucky sandy clay loam, mucky silt loam, mucky sandy loam, or mucky loam.

The A12 horizon has hue of 10YR, 2.5Y, or 5Y, value of 3, and chroma of 1 or 2. Texture is silt loam, sandy loam, or loam.

The C1g and C2g horizons have matrix colors in hue of 10YR, 2.5Y, or 5Y, value of 4 through 6, and chroma of 1 or 2; or neutral hue, value of 5 or 6, and chroma of 0. These horizons have few to many red, yellow, brown, gray, or olive mottles. Texture is sandy loam, loam, or silt loam.

The C3g and C4g horizons have matrix colors in hue of 10YR, 2.5Y, or 5Y, value of 4 through 7, and chroma of 1 or 2; or neutral hue, value of 5 through 7, and chroma of 0. Some pedons have horizons that have pockets of finer or coarser textured material. The C3g and C4g horizons have few to many yellow, brown, olive, and gray mottles. Some pedons have horizons with few to common red mottles. Texture is sandy loam, loam, or sandy clay loam.

The C5g horizon has the same colors and textures as the C3g and C4g horizons in most pedons. In addition, this horizon may have matrix colors in hue of 2.5Y or 5Y, value of 5 or 6, and chroma of 3 through 6. Where

chroma is more than 2, there are many medium and coarse mottles in shades of gray.

Bama series

The Bama series consists of well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on Coastal Plain uplands. Slope ranges from 0 to 8 percent.

Bama soils are geographically associated with Benndale, Heidel, Lucedale, Malbis, Notcher, and Troup soils. Benndale and Heidel soils have coarse-loamy control sections. Lucedale soils are darker red throughout. Malbis and Notcher soils have more than 5 percent plinthite. Troup soils have sandy epipedons more than 40 inches thick.

Typical pedon of Bama sandy loam, 0 to 2 percent slopes, is 1 1/2 miles north and 1/2 mile east of Irvington, then 150 feet south in the NE1/4NE1/4-NE1/4NE1/4 sec. 13. T. 6 S., R. 3 W.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; friable; strongly acid; clear wavy boundary.

A2—5 to 9 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; strongly acid; gradual wavy boundary.

B1—9 to 14 inches; strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

B21t—14 to 22 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—22 to 41 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; thin patchy clay films on faces of some peds; about 3 percent iron concretions, 3 to 6 mm in diameter; very strongly acid; gradual wavy boundary.

B23t—41 to 68 inches; red (2.5YR 4/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds; about 4 percent iron concretions, 3 to 6 mm in diameter; strongly acid; gradual wavy boundary.

B24t—68 to 74 inches; red (2.5YR 4/8) sandy clay loam; common medium prominent yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; thin patchy clay films on faces of some peds; about 3 percent iron concretions, 3 to 6 mm in diameter; strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile. Iron concretions and quartz pebbles, 3 to 12 mm in diameter, range from 0 to 10 percent.

The A1 or Ap horizon has hue of 10YR or 7.5YR, value of 3 through 5, and chroma of 2 through 4. The A2 horizon, where present, has hue of 10YR, value of 4 through 6, and chroma of 4 through 8.

The B1 horizon, where present, has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 through 8. Texture is sandy loam, loam, or sandy clay loam.

The upper part of B2t horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8 and may have mottles in shades of brown, red, and yellow. The lower part of the B2t horizon has colors similar to those in the upper part, or it is mottled in shades of brown, red, and yellow. Texture of the B2t horizon is loam, sandy clay loam, or clay loam.

Bayou series

The Bayou series consists of poorly drained, moderately slowly permeable soils that formed in loamy marine sediments. These soils are on uplands of the Gulf Coast Flatwoods. They are saturated to near the surface in winter and early spring. Slope ranges from 0 to 2 percent.

Bayou soils are geographically associated with the Axis, Escambia, Grady, Harleston, and Johnston soils. Axis soils are more poorly drained and do not have the argillic horizons of Bayou soils. Escambia soils have more than 5 percent plinthite in the lower part of the Bt horizon and are better drained. Grady soils have clayey control sections. Harleston soils have dominant chroma of more than 3 in the upper part of the Bt horizon. Johnston soils are more poorly drained than Bayou soils and have umbric epipedons.

Typical pedon of Bayou sandy loam, in an area of Bayou-Escambia association, gently undulating, is 2 1/2 miles west of West Fowl River on Alabama Highway 188, 2,600 feet east and 600 feet north of the SW corner of sec. 5, T. 8 S., R. 2 W.

A11—0 to 5 inches; very dark gray (10YR 3/1) sandy loam; weak medium granular structure; friable; common fine roots; very strongly acid; clear wavy boundary.

A12—5 to 9 inches; dark gray (10YR 4/1) sandy loam; few medium distinct gray (10YR 6/1) mottles; weak medium granular structure; friable; common fine roots; very strongly acid; clear wavy boundary.

A2g—9 to 18 inches; light brownish gray (10YR 6/2) sandy loam; common medium distinct light yellowish brown (2.5Y 6/4) and few medium distinct very dark gray (10YR 3/1) mottles; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; gradual wavy boundary.

B1g—18 to 26 inches; light gray (10YR 7/1) sandy loam; common medium distinct brownish yellow (10YR 6/6) and few medium distinct pale yellow (2.5Y 7/4) mottles; weak medium subangular blocky structure;

friable; few fine roots; very strongly acid; gradual wavy boundary.

B21tg—26 to 43 inches; light gray (10YR 7/1) sandy loam; common medium distinct brownish yellow (10YR 6/6), strong brown (7.5YR 5/8), light brownish gray (10YR 6/2), and red (2.5YR 5/8) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B22tg—43 to 60 inches; light gray (10YR 7/1) sandy clay loam; many medium distinct yellowish brown (10YR 5/6) and common medium distinct yellow (2.5Y 7/6) and red (2.5YR 4/8) mottles; weak medium subangular blocky structure; friable, slightly compact; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23tg—60 to 66 inches; gray (10YR 6/1) sandy clay loam; few to common medium distinct yellowish brown (10YR 5/6), pale yellow (2.5Y 7/4), and light reddish brown (2.5YR 6/4) mottles; weak medium subangular blocky structure; friable, slightly compact; thin patchy clay films on faces of peds; few pockets of sandy loam; very strongly acid.

Solum thickness is more than 60 inches. Reaction ranges from very strongly acid to strongly acid in the upper part of the profile and from extremely acid to medium acid in the lower part of the profile.

The A11 horizon has hue of 2.5Y or 10YR, value of 2.5 through 4, and chroma of 0 or 1. Texture is sandy loam or loam.

The A12 horizon has hue of 10YR, value of 4 through 6, and chroma of 1 or 2. Few to common fine or medium mottles in shades of gray, brown, or yellow are in this horizon in most pedons. Texture is sandy loam or loam.

The A2g and B1g horizons have hue of 10YR, value of 5 through 7, and chroma of 1 or 2. Few to common fine or medium mottles in shades of gray, brown, and yellow are in these horizons in most pedons. Texture is sandy loam or loam.

The B2tg horizon has hue of 10YR or 2.5Y, value of 4 through 7, and chroma of 1 or 2 with mottles in shades of gray, brown, yellow, and red, or it is mottled in shades of gray, brown, yellow, and red. Colors with chroma of 2 or less are dominant in mottled horizons. Texture of the upper part of the B2tg horizon is sandy loam or loam. Texture of the lower part is sandy clay loam or clay loam. Some pedons have pockets of coarse textured material or a few nodules of plinthite in the lower part.

Benndale series

The Benndale series consists of well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on Coastal Plain uplands. Slope ranges from 0 to 12 percent.

Benndale soils are geographically associated with Bama, Harleston, Heidel, Malbis, Poarch, Shubuta, Suffolk, Smithton, and Troup soils. Bama, Malbis, and Suffolk soils have fine-loamy control sections, and in addition, Malbis soils have more than 5 percent plinthite in the lower part of the Bt horizons. Harleston soils are on slightly lower positions than Benndale soils and have mottles with chroma of 2 or less within 30 inches of the surface. Heidel soils have Bt horizons with redder hue, and Poarch soils have more than 5 percent plinthite. Shubuta soils have clayey control sections. Smithton soils have dominant chroma of 2 or less. Troup soils have sandy epipedons more than 40 inches thick.

Typical pedon of Benndale sandy loam, in an area of Troup-Benndale association, rolling, is 300 feet north and 400 feet west of the SE corner, NE1/4NW1/4 sec. 17, T. 2 N., R. 1 W.

A1—0 to 5 inches; dark gray (10YR 4/1) sandy loam; weak medium granular structure; friable; strongly acid; clear smooth boundary.

A2—5 to 11 inches; light yellowish brown (10YR 6/4) sandy loam; weak medium granular structure; friable; strongly acid; gradual wavy boundary.

B1—11 to 16 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

B21t—16 to 40 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; thin clay films on faces of some peds; very strongly acid; gradual wavy boundary.

B22t—40 to 52 inches; yellowish brown (10YR 5/8) clay loam; few medium faint olive yellow (2.5Y 6/6) and common medium prominent red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable to firm; thin clay films on faces of most peds; very strongly acid; gradual wavy boundary.

B23t—52 to 72 inches; yellowish brown (10YR 5/8) clay loam; many medium distinct strong brown (7.5YR 5/6) and many medium prominent red (2.5YR 4/6) mottles; weak medium subangular blocky structure; friable to firm; thin clay films on faces of most peds; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile. Iron concretions range from 0 to 7 percent.

The Ap or A1 horizon has hue of 2.5Y or 10YR, value of 3 or 4, and chroma of 1 through 3. The A2 horizon, where present, has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 2 through 4. Texture is sandy loam or loam.

The B1 horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4 or 6. Texture is sandy loam or loam.

The B21t horizon has hue of 10YR, value of 5 or 6, and chroma of 4 through 8. Texture is sandy loam or loam. The lower B2t horizons have colors similar to

those of the B21t horizon and in most pedons have mottles in shades of brown, red, and, in places, gray. Texture is sandy loam, loam, sandy clay loam, or clay loam. Nodules of plinthite in the lower part range from 0 to 4 percent.

These soils differ from typical Benndale soils by having clay loam textures below a depth of 40 inches in most pedons. The available water capacity is slightly higher than in typical soils of this series.

Bethera series

The Bethera series consists of poorly drained, moderately slowly to slowly permeable soils that formed in clayey marine sediments. These soils are on nearly level and slightly depressional terraces of the Coastal Plain. These soils have a seasonal high water table near the surface mostly during winter and spring. Slope ranges from 0 to 2 percent.

Bethera soils are geographically associated with Alaga, Annemaine, Izagora, and Suffolk soils. Alaga soils are sandy throughout. Annemaine soils are on higher, convex ridges and have Bt horizons with redder hue than Bethera soils. Izagora and Suffolk soils are on slightly higher positions, are better drained, and have fine-loamy control sections.

Typical pedon of Bethera loam, in an area of Izagora-Bethera association, gently undulating, is 500 feet west of the SE corner of sec. 7, and 200 feet south in sec. 12, T. 2 N., R. 1 E.

A1—0 to 4 inches; very dark gray (10YR 3/1) loam; weak fine granular structure; friable; many fine roots; extremely acid; clear wavy boundary.

A2—4 to 6 inches; gray (10YR 5/1) loam; weak fine granular structure; friable; many fine roots; clear wavy boundary.

B1g—6 to 12 inches; light brownish gray (10YR 6/2) clay loam; weak fine subangular blocky structure; friable; many fine roots; strongly acid; clear wavy boundary.

B21tg—12 to 40 inches; light gray (2.5Y 7/2) clay loam; common medium faint light brownish gray (10YR 6/2) and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; few fine roots; thin patchy films on faces of peds; strongly acid; gradual wavy boundary.

B22tg—40 to 66 inches; light gray (10YR 6/1) clay loam; few fine faint brownish yellow (10YR 6/6), few fine distinct strong brown (7.5YR 5/6), and common medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B23tg—66 to 74 inches; light gray (10YR 6/1) clay loam; few fine faint yellowish brown (10YR 5/8), few fine distinct strong brown (7.5YR 5/6), and common medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; strongly acid; gradual wavy boundary.

B24tg—74 to 80 inches; light gray (10YR 6/1) clay loam; few fine faint brownish yellow (10YR 6/6) and few fine distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; strongly acid.

Solum thickness is more than 60 inches. Reaction ranges from strongly acid to extremely acid throughout the profile. These soils are flooded or ponded under normal conditions during late winter and early spring for brief periods.

The A horizon has hue of 10YR, value of 3 through 5, and chroma of 1 or 2.

The B1g horizon has hue of 10YR, value of 6, and chroma of 1 or 2. In some pedons it has common mottles in shades of brown and yellow. Texture is sandy clay loam or clay loam.

The B2tg horizon has hue of 2.5Y or 10YR, value of 6 or 7, and chroma of 1 or 2 with mottles in shades of brown, yellow, and red. Texture is sandy clay, clay loam, or clay.

Bibb series

The Bibb series consists of poorly drained, moderately permeable soils that formed in stratified sandy and loamy alluvium. These soils are on flood plains of streams and creeks. These soils have a water table near the surface mostly during winter and spring. Slope ranges from 0 to 1 percent.

Bibb soils are geographically associated with Dorovan, Johnston, Pamlico, and Smithton soils. Dorovan and Pamlico soils have histic epipedons. Johnston soils have umbric epipedons. Smithton soils have fine-loamy control sections.

Typical pedon of Bibb sandy loam, in an area of Pamlico-Bibb complex, 0 to 1 percent slopes, is along Miller Creek, 100 feet north and 50 feet east of the SW corner, NW1/4NE1/4 sec. 18, T. 5 S., R. 3 W.

A1—0 to 5 inches; dark gray (10YR 4/1) sandy loam, weak fine granular structure; friable; many fine and medium roots; very strongly acid; clear wavy boundary.

C1g—5 to 12 inches; dark gray (10YR 4/1) sandy loam; few strata of grayish brown (10YR 5/2) loamy sand; massive; friable; many fine and medium roots; very strongly acid; gradual wavy boundary.

C2g—12 to 21 inches; very dark grayish brown (10YR 3/2) sandy loam; common strata of light brownish gray (10YR 6/2) sand; massive; friable; few to common fine and medium roots; very strongly acid; gradual wavy boundary.

C3g—21 to 44 inches; light brownish gray (10YR 6/2) loamy sand; few strata of very dark grayish brown (10YR 3/2) loam and partially decomposed organic matter; massive; friable; few fine and medium roots; very strongly acid; gradual wavy boundary.

C4g—44 to 60 inches; stratified light gray (10YR 7/1) sand, very dark gray (10YR 3/1) sandy loam, and very pale brown (10YR 7/3) loamy sand; massive; friable; very strongly acid.

This soil is more than 60 inches deep. Reaction is strongly acid or very strongly acid throughout the profile.

The A1 horizon has hue of 10YR, value of 2 through 4, and chroma of 1 or 2. The A12 horizon, where present, has similar colors; in addition, it has value of 5 or 6 and chroma of 1 or 2. Texture of the A horizon is loamy sand, sandy loam, or loam.

The Cg horizon has hue of 2.5Y or 10YR, value of 3 through 7, and chroma of 1 or 2; or neutral hue, value of 5 or 6, and chroma of 0. Mottles in shades of brown, yellow, and red are in some pedons. Texture of the Cg horizon is loamy sand, sandy loam, or loam, or the Cg horizon is stratified. This horizon may also have thin strata that have a high content of organic matter.

Dorovan series

The Dorovan series consists of very poorly drained, very slowly permeable soils that formed in thick accumulations of organic residues. These soils are in swamp flood plains and stream bottoms. These soils are saturated to near the surface most of the year. Slope ranges from 0 to 1 percent.

Dorovan soils are geographically associated with Axis, Bibb, Johnston, Levy, Lafitte, and Pamlico soils. Axis, Bibb, Johnston, and Levy soils do not have histic epipedons. Pamlico soils have histic epipedons less than 40 inches thick. Lafitte soils have higher pH values.

Typical pedon of Dorovan muck, in an area of Dorovan-Levy association, 0 to 1 percent slopes, is south of U.S. Highway 90 on Demotropolis Road, 200 feet east and 280 feet north of the SW corner, NW1/4SW1/4 sec. 14, T. 5 S., R. 2 W.

Oa1—0 to 8 inches; very dark grayish brown (10YR 3/2) muck; black (10YR 2/1) rubbed; about 20 percent fiber unrubbed and less than 5 percent after rubbing; massive; nonsticky; common live roots; very strongly acid; gradual wavy boundary.

Oa2—8 to 50 inches; black (10YR 2/1) muck; black (10YR 2/1) rubbed; about 30 percent fiber unrubbed and less than 5 percent rubbed; massive; nonsticky; few live roots; very strongly acid; gradual wavy boundary.

0a3—50 to 80 inches; black (N 2/0) muck; black (10YR 2/1) rubbed; about 35 percent fiber unrubbed and about 8 percent rubbed; massive; nonsticky; very strongly acid.

The organic material is from 51 inches to more than 80 inches thick. The unrubbed fiber content of these horizons is generally less than 20 percent but ranges up to 40 percent. Fiber content rubbed is generally less than 10 percent but ranges up to 20 percent. Reaction is strongly acid or very strongly acid throughout the profile.

The Oa horizon has hue of 2.5Y or 10YR, value of 2 or 3, and chroma of 1 or 2; or hue is neutral, value is 2, and chroma is 0.

A IIC horizon is in some pedons and has hue of 2.5Y or 10YR, value of 3 through 5, and chroma of 1 or 2; or hue is neutral, value is 3, and chroma is 0. Texture is sand or loamy sand.

Duckston series

The Duckston series consists of poorly drained, very rapidly permeable soils that formed in thick deposits of sand that have been reworked by wave and wind action. These soils have water tables that fluctuate with the rise and fall of the tide. They are on Dauphin Island adjacent to Beaches and are subject to flooding during Gulf storms. Slope ranges from 0 to 2 percent.

Duckston soils are geographically associated with Fripp and Osier soils and Psamments. Fripp soils are on higher positions and are excessively drained. Osier soils are on higher positions, do not have buried horizons, and are more acid. Psamments are also higher in position and are more stratified because of cut-and-fill and dredging operations.

Typical pedon of Duckston sand, 0 to 2 percent slopes, is on Dauphin Island, 7 miles west of the end of Alabama Highway 163 and 600 feet south of the north coastline.

A11—0 to 2 inches; dark grayish brown (10YR 4/2) sand; many pockets of faint light gray (10YR 7/2) sand; single grained; loose; common medium and fine roots; slightly acid; clear wavy boundary.

A12—2 to 18 inches; white (10YR 8/2) sand; few medium faint light brownish gray (10YR 6/2) and few medium distinct brownish yellow (10YR 6/6) mottles; single grained; loose; few fine roots; neutral; abrupt wavy boundary.

Ab—18 to 28 inches; dark gray (N 4/0) stratified sand and loamy sand; some strata are white (10YR 8/2) and dark brown (7.5YR 3/2); massive; friable; many fine roots that are partly decomposed; neutral; clear wavy boundary.

C1g—28 to 38 inches; gray (10YR 6/1) sand; many medium faint grayish brown (10YR 5/2) mottles; single grained; loose; common fine roots and partly decomposed plant residue; neutral; gradual wavy boundary.

C2g—38 to 50 inches; gray (10YR 5/1) sand; light gray (10YR 7/1) strata; single grained; loose; few shell fragments; mildly alkaline; gradual wavy boundary.

C3g—50 to 66 inches; light gray (N 7/0) sand; few medium faint light brownish gray (10YR 6/2) pockets or strata; single grained; loose; few to common shell fragments; mildly alkaline.

Reaction ranges from mildly alkaline to slightly acid. Most pedons have few to common black and brown sand sized minerals.

The A1 horizons are 8 to 18 inches thick. They have hue of 10YR, 2.5Y, and 5Y, value that ranges from 4 through 8, and chroma of 1 or 2. Strata or pockets of sand in shades of brown and gray are present in many pedons.

The Ab horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 1 or 2; or hue is neutral, value is 4, and chroma is 0. Few to many roots and pieces of partly decomposed plant residue are in most pedons. Texture is sand or loamy sand, and in many pedons it is stratified.

The Cg horizons have hue of 10YR, 2.5Y, or 5Y, value of 5 through 8, and chroma of 1 or 2; or hue is neutral, value is 7, and chroma is 0. Most pedons have strata or small bodies in shades of brown, gray, or white. Shell fragments range from none to common.

Escambia series

The Escambia series consists of somewhat poorly drained soils with plinthite that formed in loamy marine sediments. These soils are on Coastal Plain uplands. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. These soils have a seasonal water table for short periods mostly during winter and early spring. Slope ranges from 0 to 2 percent.

Escambia soils are geographically associated with Bayou, Harleston, Malbis, Poarch, and Smithton soils. Bayou and Smithton soils are more poorly drained than Escambia soils and have dominant chroma of 2 or less. Harleston soils are better drained than Escambia soils and have less than 5 percent plinthite. Malbis soils have fine-loamy control sections. Poarch soils are better drained and do not have mottles with chroma of 2 or less within 30 inches of the surface.

Typical pedon of Escambia sandy loam, 0 to 2 percent slopes, is 300 feet north and 400 feet east of the SW corner, NE1/4NW1/4 sec. 26, T. 6 S., R. 4 W.

A1—0 to 5 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; friable; strongly acid; abrupt wavy boundary.

A3—5 to 8 inches; light olive brown (2.5Y 5/4) loam; weak medium subangular blocky structure; friable; common very dark gray worm casts; strongly acid; clear wavy boundary.

B1—8 to 14 inches; light yellowish brown (2.5Y 6/4) loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

B21t—14 to 20 inches; light yellowish brown (2.5Y 6/4) loam; few fine prominent yellowish red (5YR 5/6) and few fine distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; 1 percent slightly brittle nodules of plinthite; strongly acid; clear wavy boundary.

B22t—20 to 32 inches; light yellowish brown (2.5Y 6/4) loam; common medium prominent yellowish red (5YR 5/6), common medium distinct strong brown (7.5YR 5/6), and few medium faint light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; friable; thin clay films on faces of peds; 5 percent slightly brittle nodules of plinthite; very strongly acid; clear wavy boundary.

B23t—32 to 42 inches; mottled light gray (10YR 7/2), red (2.5YR 5/6), strong brown (7.5YR 5/6), and pale brown (10YR 6/3) loam; weak medium subangular blocky structure; friable; thin clay films on faces of peds; 10 percent slightly brittle nodules of plinthite; very strongly acid; gradual wavy boundary.

B24t—42 to 48 inches; mottled light gray (10YR 7/2), brownish yellow (10YR 6/6), and red (2.5YR 5/6) loam; weak medium subangular blocky structure; friable; 6 percent nodules of plinthite; strongly acid; clear wavy boundary.

B25t—48 to 65 inches; mottled brownish yellow (10YR 6/6), light gray (10YR 7/1), yellowish red (5YR 5/8), and pale yellow (2.5Y 7/4) loam; weak medium subangular blocky structure; friable; strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 2.5Y or 10YR, value of 3 through 5, and chroma of 1 through 4. Texture is sandy loam or loam.

The B1 horizon has hue of 2.5Y, value of 5 or 6, and chroma of 4. Texture is sandy loam or loam.

The B2t horizon has hue of 2.5Y or 10YR, value of 5 through 7, and chroma of 2 through 6 with few to common mottles in shades of gray, yellow, brown, and red. In most pedons, the lower part of the B2t horizon is mottled in shades of gray, yellow, brown, and red. Plinthite ranges from 5 to 12 percent by volume in some part of the B2t horizon. Texture is sandy loam, loam, or sandy clay loam.

Fripp series

The Fripp series consists of excessively drained, rapidly permeable soils that formed in thick deposits of sand that have been reworked by wave and wind action.

These soils are on rolling to undulating dunes adjacent to Beaches on Dauphin Island. They are subject to flooding for brief periods by high tides during coastal storms. Slopes are generally short and choppy and range from 2 to 20 percent.

Fripp soils are geographically associated with Duckston and Osier soils. These soils are below Fripp soils, are more poorly drained, and have aquic moisture regimes.

Typical pedon of Fripp sand, rolling, is on Dauphin Island, 5.1 miles east of the end of Alabama Highway 163 and 2,300 feet south.

A1—0 to 4 inches; light gray (10YR 7/2) sand; single grained; loose; common medium and fine roots; about 2 to 5 percent black sand grains; neutral; clear wavy boundary.

C1—4 to 12 inches; very pale brown (10YR 7/3) sand; single grained; loose; common medium and fine roots; few pockets of dark gray and black sand; slightly acid; clear wavy boundary.

C2—12 to 36 inches; very pale brown (10YR 8/3) sand; few medium faint yellow (10YR 7/6) mottles; single grained; loose; few fine roots; about 2 to 5 percent of sand grains are black; neutral; gradual wavy boundary.

C3—36 to 60 inches; white (10YR 8/2) sand; few fine faint yellow (10YR 7/6) mottles; single grained; loose; about 5 percent of sand grains are black and brown; neutral; gradual wavy boundary.

C4—60 to 99 inches; white (10YR 8/2) sand; single grained; loose; about 5 percent of sand grains are black and brown; neutral.

Reaction ranges from mildly alkaline through slightly acid. Black and brown sand grains range from few to common throughout most pedons. A few small shell fragments are in some pedons.

The A horizon has hue of 5Y or 10YR, value of 6 or 7, and chroma of 1 or 2. Texture is fine sand or sand.

The C horizons have hue of 10YR, value of 7 or 8, and chroma of 2 or 3. Many pedons contain mottles in hue of 10YR, value of 5 through 7, and chroma of 1 through 6. Texture is fine sand or sand.

Grady series

Grady series consists of poorly drained, slowly permeable soils that formed in clayey marine sediments. These soils are in depressions of the Coastal Plain uplands. Water is near or above the surface of these soils except during extended dry periods. Slope ranges from 0 to 1 percent.

Grady soils are geographically associated with Bayou, Malbis, Notcher, Robertsdale, and Saucier soils. Bayou soils have coarse-loamy control sections. Malbis, Notcher, Robertsdale, and Saucier soils are better drained than Grady soils, have fine-loamy control sections, and have more than 5 percent plinthite.

Typical pedon of Grady loam, 0 to 1 percent slopes, is 3 1/2 miles south of U.S. Highway 90 on Padgett Switch Road, 500 feet east and 20 feet south of the NW corner, NE1/4SW1/4 sec. 31, T. 6 S., R. 2 W.

A1—0 to 6 inches; black (5Y 2/1) loam; moderate fine granular structure; firm; very strongly acid; clear smooth boundary.

B1g—6 to 12 inches; dark gray (5Y 4/1) loam; few fine distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; very strongly acid; gradual smooth boundary.

B21tg—12 to 23 inches; dark gray (5Y 4/1) clay; common fine prominent reddish yellow (5YR 6/8) and light gray (5YR 7/1) mottles; moderate medium subangular blocky structure; very firm; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22tg—23 to 35 inches; gray (5Y 5/1) clay; many medium prominent reddish yellow (5YR 7/8) and light gray (5YR 7/1) mottles; strong medium subangular blocky structure; very firm; thin patchy clay films on faces of peds; extremely acid; gradual wavy boundary.

B23tg—35 to 66 inches; mottled light gray (5YR 7/1), reddish yellow (5YR 7/8), and gray (5YR 5/1) clay; strong medium subangular blocky structure; very firm; extremely acid.

Solum thickness is more than 60 inches. Reaction ranges from strongly acid to extremely acid throughout the profile.

The A horizon has hue of 5Y, 2.5Y or 10YR, value of 2 or 3, and chroma of 1; or it has neutral hue, value of 3, and chroma of 0.

The A2g or B1g horizon has hue of 5Y, 2.5Y, or 10YR; value of 4 or 5; and chroma of 1 or 2. Texture is loam or sandy clay loam.

The B21tg and B22tg horizons have hue of 5Y, 2.5Y, or 10YR; value of 4 through 6; and chroma of 1; or neutral hue, value of 7, and chroma of 0. These horizons have mottles in shades of gray, brown, yellow, and red. In most pedons the B23tg horizon is mottled in shades of gray, brown, yellow, and red. Texture is clay or sandy clay.

Harleston series

The Harleston series consists of moderately well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on Coastal Plain terraces and low uplands. These soils have a water table about 2 to 3 feet below the surface during winter and spring. Slope ranges from 0 to 5 percent.

Harleston soils are geographically associated with Alaga, Bayou, Benndale, Escambia, Izagora, Pactolus, Smithton, Suffolk, and Susquehanna soils. Alaga and Pactolus soils have sandy control sections. Bayou and Smithton soils are poorly drained and have dominant chroma of 2 or less. Benndale soils are well drained and do not have mottles with chroma of 2 or less within 30 inches of the surface. Escambia soils have more than 5 percent plinthite in some parts of the Bt horizons. Izagora and Suffolk soils have fine-loamy control sections. Susquehanna soils have more than 35 percent clay in their control sections.

Typical pedon of Harleston sandy loam, 0 to 2 percent slopes, is 650 feet north and 1,500 feet east of the SE corner of sec. 7 in sec. 36, T. 5 S., R. 1 W.

A1—0 to 3 inches; very dark gray (10YR 3/1) sandy loam; weak fine granular structure; very friable; strongly acid; gradual smooth boundary.

A2—3 to 10 inches; light yellowish brown (2.5Y 6/4) sandy loam; weak fine granular structure; friable; very strongly acid; gradual wavy boundary.

B21t—10 to 22 inches; light yellowish brown (2.5Y 6/4) sandy loam; few fine faint yellow (2.5Y 7/6) and light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B22t—22 to 35 inches; brownish yellow (10YR 6/6) loam; common fine distinct light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B23t—35 to 46 inches; mottled light gray (N 7/0), olive yellow (2.5Y 6/6), and strong brown (7.5YR 5/8) loam; weak fine subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B24t—46 to 72 inches; mottled gray (N 5/0), olive yellow (2.5Y 6/8), and yellowish red (5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; slightly compact; thin patchy clay films on faces of peds; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 2.5Y or 10YR, value of 6, and chroma of 3 or 4.

The B1 horizon, where present, has hue of 2.5Y or 10YR, value of 6, and chroma of 4 or 6. Texture is sandy loam or loam.

The B21t and B22t horizons have hue of 2.5Y or 10YR, value of 5 through 7, and chroma of 4 through 8 with few to common mottles in shades of gray, yellow, or brown. Mottles with chroma of 2 or less are within 20 inches of the surface. Texture is sandy loam or loam. The B23t and B24t horizons are mottled in shades of gray, yellow, brown, and red, or they have a matrix color in hue of 10YR, value of 6 or 7, and chroma of 4 or 6 with mottles. Texture is sandy loam, loam, or sandy clay loam.

Heidel series

The Heidel series consists of well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on Coastal Plain uplands. Slope ranges from 0 to 12 percent.

Heidel soils are geographically associated with Bama, Benndale, Lucedale, Shubuta, and Troup soils. Bama and Lucedale soils have fine-loamy control sections. Benndale soils have Bt horizons with yellower hues than Heidel soils. Shubuta soils have clayey control sections. Troup soils have sandy epipedons more than 40 inches thick.

Typical pedon of Heidel sandy loam, 0 to 2 percent slopes, is 400 feet east and 150 feet south of the NW corner, NE1/4NW1/4 sec. 9, T. 5 S., R. 3 W.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; very friable; medium acid; abrupt wavy boundary.

B1—7 to 13 inches; reddish brown (5YR 5/4) sandy loam; few pockets of dark grayish brown sandy loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

B21t—13 to 33 inches; yellowish red (5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; most sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B22t—33 to 68 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; most sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B23t—68 to 92 inches; red (2.5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid except for the surface layer in limed areas.

The A1 or Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 2 or 3. The A2 horizon, where present, has hue of 10YR, value of 4 or 5, and chroma of 3 through 6. Texture of the A horizon is loamy sand or sandy loam.

The B1 horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 4 through 8. Texture is sandy loam or loam.

The B2t horizon has hue of 5YR, 2.5YR, or 10R, value of 4 or 5, and chroma of 6 or 8. Texture ranges from

sandy loam in the upper part of the horizon to loam or sandy clay loam in the lower part.

Izagora series

The Izagora series consists of moderately well drained soils that formed in loamy marine sediments. These soils are on terraces of the Coastal Plain. They are moderately permeable in the upper part of the subsoil and slowly permeable in the lower part. These soils have a water table 2 to 3 feet below the surface mostly during winter. Slope is dominantly less than 2 percent but ranges up to 5 percent.

Izagora soils are geographically associated with Alaga, Annemaine, Bethera, and Harleston soils. Alaga soils have sandy control sections. Annemaine and Bethera soils have clayey control sections. Harleston soils have coarse-loamy control sections.

Typical pedon of Izagora sandy loam, in an area of Izagora-Bethera association, gently undulating, 400 feet west and 200 feet north of the SE corner of sec. 7, T. 2 N., R. 1 E.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; friable; extremely acid; clear wavy boundary.

A2—5 to 8 inches; brown (10YR 5/3) sandy loam; weak fine subangular blocky structure; friable; clear wavy boundary.

B1—8 to 14 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.

B21t—14 to 20 inches; yellowish brown (10YR 5/8) clay loam; few fine distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22t—20 to 28 inches; yellowish brown (10YR 5/4) clay loam; common medium prominent red (2.5YR 4/6) and few fine faint light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23t—28 to 42 inches; light yellowish brown (10YR 6/4) clay loam; common medium faint light gray (10YR 7/2) and red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B24t—42 to 54 inches; mottled olive yellow (2.5Y 6/6), light gray (10YR 6/1), yellowish red (5YR 5/6), and red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B25t—54 to 70 inches; mottled light gray (10YR 6/1), gray (5YR 5/1), pale red (10R 6/4), and strong brown (7.5YR 5/6) clay; weak coarse subangular blocky structure; firm; strongly acid; clear wavy boundary.

B3g—70 to 80 inches; light brownish gray (10YR 6/2) clay; few fine faint brownish yellow (10YR 6/6), strong brown (7.5YR 5/6), and common medium distinct red (10R 4/6) mottles; weak coarse subangular blocky structure; firm; few pockets of friable sandy clay loam; strongly acid.

Solum thickness is more than 60 inches. Reaction ranges from strongly acid to extremely acid.

The A horizon has hue of 2.5Y or 10YR, value of 3 through 5, and chroma of 2 through 4.

The B1 horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4 or 6. It is sandy loam or loam.

The upper part of the B2t horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 through 8 with mottles in shades of red, gray, brown, and yellow. The lower part has similar colors or is mottled in shades of gray, red, brown, or yellow. In most pedons, gray colors increase with depth. Texture is loam or clay loam in the upper part and clay loam or clay in the lower part.

The B3g horizon has colors and textures similar to those of the lower part of the B2t horizon.

Johnston series

The Johnston series consists of very poorly drained, moderately rapidly permeable soils that formed in sandy and loamy sediments. These soils are along streams and on flat areas in the Gulf Coast Flatwoods. Water is near or above the surface for most of the year. Slope ranges from 0 to 1 percent.

Johnston soils are geographically associated with Axis, Bayou, Bibb, Dorovan, Osier, Pamlico, and Smithton soils. Axis soils have thinner dark colored surface layers than Johnston soils and are flooded by tide waters. Bayou, Bibb, Osier, and Smithton soils do not have umbric epipedons. In addition, Bayou and Smithton soils have argillic horizons. Dorovan and Pamlico soils have histic epipedons.

Typical pedon of Johnston mucky loam in an area of Johnston-Pamlico association, 0 to 1 percent slopes, is east of U.S. Highway 90, 500 feet east and 150 feet north of the SW corner, SE1/4NE1/4 sec. 11, T. 5 S., R. 2 W.

A11—0 to 6 inches; black (10YR 2/1) mucky loam; massive; friable; very strongly acid; gradual wavy boundary.

A12—6 to 36 inches; very dark gray (10YR 3/1) mucky loam; weak fine subangular blocky structure; friable; very strongly acid; clear wavy boundary.

AC—36 to 46 inches; dark gray (10YR 4/1) and gray (10YR 5/1) loamy sand; single grained; loose; very strongly acid; clear wavy boundary.

Cg—46 to 72 inches; light gray (10YR 6/1) sand; single grained; loose; very strongly acid.

This soil is more than 60 inches deep. Reaction is strongly acid or very strongly acid throughout the profile.

The A1 horizon is 24 to 48 inches thick. It has hue of 2.5Y or 10YR, value of 2 or 3, and chroma of 1; or it has neutral hue, value of 2 or 3, and chroma of 0. Texture is mucky loam or mucky fine sandy loam. It contains 8 to 20 percent organic matter.

The AC horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. Texture is loamy fine sand or loamy sand.

The Cg horizon has hue of 10YR, value of 5 through 7, and chroma of 1 or 2. Texture is sand, loamy sand, or light sandy clay loam. The Cg horizon is stratified with these textures in some pedons.

Lafitte series

The Lafitte series consists of very poorly drained, moderately rapidly permeable soils that formed in thick accumulations of herbaceous plant remains. These nearly level soils are in tidal marsh areas of the Gulf Coast Flatwoods at the mouths of streams and rivers. They are subject to inundation with brackish water at high tide. Slope is less than 1 percent.

Lafitte soils are geographically associated with Axis soils. Axis soils do not have histic epipedons.

Typical pedon of Lafitte muck, 0 to 1 percent slopes, is 1,000 feet south and 900 feet west of the mouth of Alligator Bayou in sec. 1, T. 5 S., R. 1 W.

Oe—0 to 7 inches; very dark grayish brown (2.5Y 3/2) muck; massive; slightly fluid; about 70 percent fiber before rubbing, about 20 percent after rubbing; about 20 percent mineral content; common live roots; neutral; gradual wavy boundary.

Oa1—7 to 45 inches; very dark brown (10YR 2/2) muck; massive; slightly fluid; about 70 percent fiber before rubbing, about 12 percent after rubbing; about 20 percent mineral content; mildly alkaline; gradual wavy boundary.

Oa2—45 to 63 inches; very dark brown (10YR 2/2) muck; massive; semifluid; about 50 percent fiber before rubbing, about 10 percent after rubbing; about 15 percent mineral content; mildly alkaline; clear smooth boundary.

IICg—63 to 73 inches; very dark gray (5Y 3/1) silty clay; massive; semifluid; about 15 percent fiber before rubbing, less than 5 percent after rubbing; moderately alkaline.

Thickness of the organic material exceeds 51 inches. Reaction ranges from mildly alkaline to slightly acid in the surface tier and from mildly alkaline to neutral in the subsurface and bottom tiers in its natural state. When the soil is air-dried, the reaction drops to extremely acid (pH 3.5-4.5) throughout.

The Oe horizon, where present, is less than 8 inches thick in most pedons. It has hue of 5Y, 2.5Y, or 10YR, value of 3, and chroma of 1 or 2. Texture is muck or mucky loam. The fiber content ranges from 15 to 45 percent after rubbing. Mineral content ranges from 0 to about 30 percent.

The Oa horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Fiber content after rubbing ranges from less than 5 percent up to about 15 percent. Mineral content ranges from 0 to about 20 percent.

The IICg horizon has hue of 5Y or 2.5Y, value of 3 or 4, and chroma of 1 or 2. Texture ranges from silty clay to silt loam. Fiber content after rubbing is less than 5 percent.

Levy series

The Levy series consists of very poorly drained, slowly permeable soils that formed in clayey alluvial sediments. These soils are in swamps and on first bottoms along the Mobile and Tensaw Rivers. Water is near or above the surface of these soils for most of the year. Slope is less than 1 percent.

Levy soils are geographically associated with Dorovan soils, which have histic epipedons.

Typical pedon of Levy silty clay loam in an area of Dorovan-Levy association, 0 to 1 percent slopes, is 500 feet east and 1,800 feet south of the NW corner of sec. 33, T. 1 N., R. 1 E.

A1—0 to 6 inches; gray (10YR 5/1) silty clay loam, many fine distinct dark brown (7.5YR 4/4) mottles; massive; can be squeezed between fingers with difficulty, leaves large residue; estimated *n* value of 0.9; many fine roots, few medium roots; 30 percent partly decayed stems, roots, and leaves; strongly acid; abrupt wavy boundary.

C1g—6 to 14 inches; gray (N 5/0) clay; few medium distinct dark brown (7.5YR 4/4) mottles; massive; can be squeezed between fingers with difficulty, leaves large residue; estimated *n* value of 0.8; many fine and medium roots; very strongly acid; gradual wavy boundary.

C2g—14 to 27 inches; gray (N 5/0) clay; common medium distinct dark brown (7.5YR 4/4) mottles; massive; can be squeezed between fingers with difficulty, leaves large residue; estimated *n* value of 0.8; common fine and medium roots; strongly acid; clear wavy boundary.

C3g—27 to 45 inches; gray (N 5/0) clay; massive; can be squeezed easily between fingers, leaves small residue; estimated *n* value of 0.7; common fine roots; few wood fragments; extremely acid; gradual wavy boundary.

C4g—45 to 75 inches; gray (N 5/0) clay; massive; can be squeezed easily between fingers, leaves small residue; estimated *n* value of 0.4; few wood fragments; very strongly acid.

This soil is more than 60 inches thick. Reaction ranges from strongly acid to extremely acid. It has fragments of wood, roots, leaves, and logs throughout the profile below about 20 inches. The *n* value ranges from 0.7 to 1.0 in all mineral horizons above a depth of 40 inches.

The A horizon has hue of 10YR, value of 3 through 5, and chroma of 1 or 2.

The Cg horizon has hue of 5Y, 2.5Y, or 10YR, value of 4 or 5, and chroma of 1 or 2; or the hue is neutral, value is 5, and chroma is 0. Most pedons have mottles in shades of brown or yellow in the upper part of this horizon. Texture is silty clay or clay. In some pedons, below depths of about 42 inches, this horizon is stratified with sandy, loamy, or clayey materials or has organic layers.

Lucedale series

The Lucedale series consists of well drained, moderately permeable soils that formed in loamy marine sediments. These soils are on nearly level Coastal Plain uplands. Slope ranges from 0 to 2 percent.

Lucedale soils are geographically associated with Bama and Heidel soils. Bama soils have moist color values of 4 or more throughout. Heidel soils have coarse-loamy control sections.

Typical pedon of Lucedale sandy loam, 0 to 2 percent slopes, is 1,100 feet north and 50 feet east of the SW corner of sec. 21, T. 4 S., R. 3 W.

Ap—0 to 8 inches; dark reddish brown (5YR 3/2) sandy loam; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

B21t—8 to 16 inches; dark reddish brown (2.5YR 3/4) sandy loam; weak fine subangular blocky structure; friable; thin patchy clay films on faces of peds; strongly acid; clear wavy boundary.

B22t—16 to 50 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B23t—50 to 80 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; firm; thin patchy clay films on faces of peds; very strongly acid.

Solum thickness is more than 60 inches. Reaction is slightly acid to very strongly acid.

The A horizon has hue of 5YR or 2.5YR, value of 3, and chroma of 2 through 4.

The B2t horizon has hue of 5YR, 2.5YR, or 10R, value of 3, and chroma of 4 or 6. Texture is loam, sandy clay loam, or clay loam.

Malbis series

The Malbis series consists of moderately well drained soils with plinthite that formed in loamy marine sediments. These soils are on Coastal Plain uplands. These soils are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. They have a water table 2 1/2 to 4 feet below the surface mostly during winter. Slope ranges from 0 to 5 percent.

Malbis soils are geographically associated with Bama, Benndale, Escambia, Grady, Notcher, Poarch, and Saucier soils. Bama soils have subsoils with redder hue than Malbis soils and have less than 5 percent plinthite. Benndale, Escambia, and Poarch soils have coarse-loamy control sections. Grady soils are poorly drained and have clayey control sections. Notcher soils have more than 5 percent iron concretions throughout the profile. Saucier soils have more than 5 percent iron concretions and have mottles with chroma of 2 or less within 30 inches of the surface.

Typical pedon of Malbis sandy loam, 0 to 2 percent slopes, is 2 miles west of entrance to Bates Field on Airport Boulevard, 500 feet south and 350 feet east of the NW corner, NE1/4NW1/4 sec. 27, T. 4 S., R. 3 W.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; strongly acid; clear wavy boundary.

A2—5 to 7 inches; yellowish brown (10YR 5/4) and dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; strongly acid; clear wavy boundary.

B21t—7 to 22 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; 2 percent iron concretions; very strongly acid; gradual wavy boundary.

B22t—22 to 46 inches; yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; 3 percent iron concretions; very strongly acid; gradual wavy boundary.

B23t—46 to 60 inches; yellowish brown (10YR 5/6) loam; common medium and distinct mottles in shades of brown and red; moderate medium subangular blocky structure; friable; 10 to 12 percent slightly brittle nodules of plinthite; 3 percent iron concretions; very strongly acid; gradual wavy boundary.

B24t—60 to 72 inches; mottled brownish yellow (10YR 6/6), red (2.5YR 4/6), strong brown (7.5YR 5/6), and light gray (5Y 7/2) sandy clay loam; moderate medium subangular blocky structure; friable; 12 to

20 percent slightly brittle nodules of plinthite; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile. Iron concretions range from 0 to 5 percent throughout the profile. Depth to plinthite ranges from 24 to 48 inches. Plinthite ranges from 5 to 15 percent.

The A horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 4.

The upper part of the B2t horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. The lower part has similar colors and is mottled in shades of gray, yellow, brown, and red. Texture is loam, sandy clay loam, or clay loam.

Notcher series

The Notcher series consists of moderately well drained soils with iron concretions and plinthite. These soils formed in loamy marine sediments on Coastal Plain uplands. These soils are moderately permeable to a depth of 44 inches and moderately slowly permeable below. They have a seasonal high water table about 3 to 4 feet below the surface mostly during winter and spring. Slope ranges from 0 to 8 percent.

Notcher soils are geographically associated with Bama, Benndale, Grady, Malbis, Robertsdale, and Saucier soils. Bama soils have subsoils with redder hue than Notcher soils and have less than 5 percent plinthite. Benndale soils have coarse-loamy control sections. Grady soils are poorly drained and have clayey control sections. Malbis soils have less than 5 percent iron concretions. Robertsdale and Saucier soils have mottles with chroma of 2 or less within 30 inches of the surface.

Typical pedon of Notcher sandy loam, 0 to 2 percent slopes, is 1 1/2 miles north of Irvington, 400 feet east and 75 feet north of the SW corner, SE1/4SW1/4 sec. 12, T. 6 S., R. 3 W.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; few iron concretions; medium acid; abrupt smooth boundary.

B21tcn—7 to 16 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; 25 percent small iron concretions; strongly acid; clear wavy boundary.

B22tcn—16 to 28 inches; yellowish brown (10YR 5/8) loam; weak medium subangular blocky structure; friable; 12 percent small iron concretions; strongly acid; gradual wavy boundary.

B23tcn—28 to 44 inches; yellowish brown (10YR 5/8) loam; few fine prominent red (2.5YR 4/8) mottles; weak medium subangular and angular blocky structure; friable; 10 percent small iron concretions; 1 to 3 percent nodules of plinthite; very strongly acid; gradual wavy boundary.

B24tcn—44 to 57 inches; mottled yellowish brown (10YR 5/8), yellow (2.5Y 7/6), red (2.5YR 4/8), and light gray (2.5Y 7/2) clay loam; weak medium subangular blocky structure; friable; 5 percent small iron concretions; 12 to 15 percent slightly brittle nodules of plinthite; very strongly acid; clear wavy boundary.

B25t—57 to 70 inches; mottled yellowish red (5YR 4/8), strong brown (7.5YR 5/6), yellowish brown (10YR 5/8), and light gray (2.5Y 7/2) clay loam; moderate medium subangular and angular blocky structure; friable; 10 percent slightly brittle nodules of plinthite; very strongly acid; clear wavy boundary.

B26t—70 to 76 inches; mottled red (2.5YR 5/8), pale yellow (2.5Y 7/4), light gray (5Y 7/2), and strong brown (7.5YR 5/8) clay loam; moderate coarse subangular and angular blocky structure; friable to firm; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile. Depth to horizons with 5 to 30 percent plinthite ranges from 26 to 55 inches. Iron concetions make up from 5 to 25 percent by volume of horizons without plinthite. In horizons with plinthite, iron concretions range from 0 to 5 percent. Pockets may contain up to 45 percent iron concretions.

The A horizon has hue of 10YR or 2.5Y, value of 3 through 5, and chroma of 2 through 6. Texture is sandy loam or loam.

The B1cn horizon, where present, has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8. Texture is loam or sandy clay loam.

The upper part of the B2t horizon has hue of 10YR through 2.5YR, value of 5 or 6, and chroma of 6 or 8. The lower part of the B2t horizon has similar colors with mottles in shades of gray, yellow, brown, and red, or it is mottled in shades of gray, yellow, brown, and red. Texture is sandy clay loam, loam, or clay loam.

Osier series

The Osier series consists of poorly drained, rapidly permeable soils that formed in sandy marine sediments. These soils are on nearly level flood plains and low uplands of the Coastal Plain and Gulf Coast Flatwoods. These soils have water near the surface mostly during winter and spring months. Slope ranges from 0 to 2 percent.

Osier soils are geographically associated with Duckston, Fripp, Johnston, Pactolus, and Smithton soils. Duckston soils are on lower positions, have buried horizons, and are not as acid as Osier soils. Fripp soils are excessively drained. Johnston soils have umbric epipedons. Pactolus soils are on slightly higher positions and are better drained. Smithton soils have coarse-loamy control sections.

Typical pedon of Osier loamy sand, 0 to 2 percent slopes, is 0.4 mile south of the intersection of Interstate 10 and U.S. Highway 90, 150 feet east and 400 feet south of the NW corner, SE1/4SW1/4 sec. 26, T. 5 S., R. 2 W.

A1—0 to 6 inches; very dark gray (10YR 3/1) loamy sand; weak fine granular structure; very friable; strongly acid; clear wavy boundary.
C1g—6 to 16 inches; grayish brown (10YR 5/2) loamy sand; few pockets of very dark gray (10YR 3/1) loamy sand; weak fine granular structure; loose; strongly acid; gradual wavy boundary.
C2g—16 to 30 inches; light brownish gray (10YR 6/2) loamy sand; common medium faint dark grayish brown (10YR 4/2) and few fine faint pale brown (10YR 6/3) mottles; single grained; loose; very strongly acid; gradual wavy boundary.
C3g—30 to 43 inches; light brownish gray (10YR 6/2) loamy sand; few fine distinct yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), and common medium faint grayish brown (10YR 5/2) mottles; single grained; loose; very strongly acid; gradual wavy boundary.
C4g—43 to 51 inches; light brownish gray (10YR 6/2) fine sand; few fine faint grayish brown (10YR 5/2) mottles; single grained; loose; very strongly acid; gradual wavy boundary.
C5g—51 to 66 inches; light gray (10YR 7/1) fine sand; single grained; loose; very strongly acid.

Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The Cg horizon has hue of 2.5Y or 10YR, value of 4 through 7, and chroma of 1 or 2; or hue is neutral, value is 7, and chroma is 0. It has few to common mottles in shades of gray, yellow, and brown. Texture is loamy sand or loamy fine sand in the upper part and sand or fine sand in the lower part.

Pactolus series

The Pactolus series consists of moderately well drained to somewhat poorly drained, rapidly permeable soils that formed in sandy marine sediments. These soils are on uplands of the Coastal Plain and Gulf Coast Flatwoods. They have a water table about 1 1/2 to 2 1/2 feet below the surface mostly during winter. Slope ranges from 0 to 2 percent.

Pactolus soils are geographically associated with Harleston, Osier, Smithton, and Troup soils. Harleston and Smithton soils have coarse-loamy control sections. Osier soils are poorly drained and have dominant chroma of 2 or less throughout. Troup soils have sandy epipedons more than 40 inches thick and have argillic horizons.

Typical pedon of Pactolus loamy sand, 0 to 2 percent slopes, is 175 feet south and 500 feet east of the NW corner, NW1/4NE1/4 sec. 17, T. 6 S., R. 4 W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable; strongly acid; abrupt smooth boundary.
C1—3 to 10 inches; light yellowish brown (2.5Y 6/4) loamy sand; single grained; very friable; very strongly acid; gradual wavy boundary.
C2—10 to 15 inches; yellowish brown (10YR 5/6) loamy sand; single grained; very friable; very strongly acid; gradual wavy boundary.
C3—15 to 39 inches; yellowish brown (10YR 5/6) loamy sand; few fine faint light gray (10YR 7/2) mottles in the lower part; single grained; very friable; very strongly acid; gradual wavy boundary.
C4—39 to 51 inches; brownish yellow (10YR 6/6) sand; common medium faint yellowish brown (10YR 5/6) and light gray (10YR 7/1) mottles; single grained; friable; very strongly acid; gradual wavy boundary.
C5—51 to 70 inches; light gray (10YR 7/1) sand; common medium distinct brownish yellow (10YR 6/6), yellowish brown (10YR 5/8), pale brown (10YR 6/3), and pale yellow (2.5Y 8/4) mottles; single grained; friable; very strongly acid.

Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon has hue of 2.5Y or 10YR, value of 3 or 4, and chroma of 1 or 2; or hue is neutral, value is 4, and chroma is 0.

The upper C horizons have hue of 2.5Y or 10YR, value of 5 through 7, and chroma of 4 through 8. Mottles in shades of gray are below a depth of 20 inches. The lower C horizons have hue of 10YR, value of 7, and chroma of 1. In most pedons the C horizons are mottled in shades of brown and yellow. Texture is sand or loamy sand.

Pamlico series

The Pamlico series consists of very poorly drained, moderately permeable soils that formed in organic residues overlying sandy sediments. These soils are along streams and on level surfaces of the Gulf Coast Flatwoods and Coastal Plain. They have water near or above the surface for extended periods. Slope ranges from 0 to 1 percent.

Pamlico soils are geographically associated with Axis, Bibb, Dorovan, and Johnston soils. Axis, Bibb, and Johnston soils do not have histic epipedons. Dorovan soils have histic epipedons more than 51 inches thick.

Typical pedon of Pamlico muck, in an area of Pamlico-Bibb complex, 0 to 1 percent slopes, is 0.8 mile west of Union Church, 600 feet north and 550 feet east of the SW corner, SW1/4NW1/4 sec. 26, T. 5 S., R. 4 W.

Oa1—0 to 5 inches; black (N 2/0) muck; many live roots; about 30 percent fiber unrubbed; 15 percent fiber after rubbing, massive; friable; very strongly acid; clear wavy boundary.

Oa2—5 to 22 inches; black (N 2/0) muck; 30 percent fiber unrubbed; 5 percent rubbed; massive; friable; very strongly acid; gradual wavy boundary.

Oa3—22 to 30 inches; black (N 2/0) muck; 30 percent fiber unrubbed; 10 percent rubbed; massive; friable; very strongly acid; clear wavy boundary.

Oa4—30 to 38 inches; very dark brown (10YR 2/2) muck; 30 percent fiber unrubbed; less than 5 percent rubbed; massive; friable; very strongly acid; abrupt wavy boundary.

IIC1g—38 to 45 inches; gray (10YR 5/1) sand; few pockets of very dark gray (10YR 3/1) loam; single grained; loose; very strongly acid; gradual wavy boundary.

IIC2g—45 to 66 inches; light gray (10YR 7/1) sand; single grained; loose; very strongly acid.

The organic material is 16 to 40 inches thick. Typically, the fiber content of these horizons is less than 40 percent unrubbed and less than 10 percent rubbed, but ranges up to 15 percent rubbed. Reaction is very strongly acid or extremely acid throughout the profile.

The Oa horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2; or the hue is neutral, value is 2, and chroma is 0.

The Cg horizon has hue of 10YR, value of 3 through 7, and chroma of 1 or 2; or the hue is neutral, value is 5 or 6, and chroma is 0. Texture is sand, loamy sand, or loamy fine sand.

Poarch series

The Poarch series consists of well drained to moderately well drained soils with plinthite. These soils formed in loamy marine sediments on the Coastal Plain uplands. They are moderately permeable in the upper part of the subsoil and moderately slowly permeable in the lower part. Slope ranges from 0 to 2 percent.

Poarch soils are geographically associated with Benndale, Escambia, and Malbis soils. Benndale soils have less than 5 percent plinthite. Escambia soils are somewhat poorly drained and have mottles with chroma of 2 or less within 30 inches of the surface. Malbis soils have fine-loamy control sections.

Typical pedon of Poarch sandy loam, 0 to 2 percent slopes, is three-fourths of a mile east of Padgett Switch Road on Half Mile Road, 350 feet south and 100 feet east of the NW corner, NE1/4SE1/4 sec. 29, T. 6 S., R. 2 W.

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; very friable; strongly acid; abrupt smooth boundary.

A2—6 to 11 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine granular structure; very friable; strongly acid; clear wavy boundary.

B21t—11 to 31 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B22t—31 to 36 inches; yellowish brown (10YR 5/6) loam; few medium distinct light yellowish brown (2.5Y 6/4) mottles; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay; very strongly acid; gradual wavy boundary.

B23t—36 to 48 inches; brownish yellow (10YR 6/6) loam; common medium distinct strong brown (7.5YR 5/6) and light yellowish brown (2.5Y 6/4), common medium prominent red (2.5YR 4/6), and few fine faint light gray (10YR 7/2) mottles; weak medium subangular blocky structure; friable; thin patchy clay films on faces of some peds; 6 to 8 percent slightly brittle nodules of plinthite; very strongly acid; gradual wavy boundary.

B24t—48 to 58 inches; mottled brownish yellow (10YR 6/6), light gray (10YR 7/2), red (2.5YR 4/6), light yellowish brown (2.5Y 6/4), and reddish yellow (7.5YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds; 8 to 10 percent slightly brittle nodules of plinthite; very strongly acid; gradual wavy boundary.

B25t—58 to 66 inches; mottled light gray (10YR 7/2), brownish yellow (10YR 6/6), light yellowish brown (2.5Y 6/4), red (2.5YR 4/6), and light red (2.5YR 6/6) sandy clay loam; weak coarse subangular blocky structure; friable; less than 5 percent slightly brittle nodules of plinthite; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile. Depth to horizons with more than 5 percent plinthite ranges from 30 to 48 inches.

The A1 horizon has hue of 2.5Y or 10YR, value of 3 through 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR or 2.5Y, value of 6, and chroma 3 or 4. Texture is loam or sandy loam.

The B21t and B22t horizons have hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4 through 8. The lower Bt horizons are mottled in shades of gray, yellow, brown, and red or have matrix colors with hue of 10YR, value of 5 or 6, and chroma of 6 or 8 with mottles. Texture of the B2t horizon is loam or sandy clay loam. In some pedons the lower B2t horizons are slightly brittle and compact.

Robertsdale series

The Robertsdale series consists of somewhat poorly drained soils with plinthite that formed in loamy marine

sediments. These soils are on slightly depressional Coastal Plain uplands. Permeability is slow in layers with plinthite. They have a water table near the surface in winter and early spring. Slope ranges from 0 to 1 percent.

Robertsdale soils are geographically associated with Grady, Notcher, and Saucier soils. Grady soils have clayey control sections and are poorly drained. Notcher and Saucier soils are moderately well drained and have mottles with chroma 2 or less at a depth of more than 20 inches.

Typical pedon of Robertsdale loam, 0 to 1 percent slopes, is 500 feet east and 150 feet south of the NW corner, NE1/4SE1/4 sec. 34, T. 5 S., R. 3 W.

A1—0 to 5 inches; very dark gray (10YR 3/1) loam; weak fine granular structure; friable; about 5 percent iron concretions; strongly acid; clear wavy boundary.

B1cn—5 to 10 inches; light olive brown (2.5Y 5/4) loam; weak medium subangular blocky structure; friable; 6 percent iron concretions; strongly acid; clear wavy boundary.

B21tcn—10 to 18 inches; light yellowish brown (2.5Y 6/4) loam; few medium distinct strong brown (7.5YR 5/6) and few fine distinct light gray (10YR 7/2) mottles; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds and concretions; about 8 percent iron concretions; strongly acid; clear wavy boundary.

B22tcn—18 to 29 inches; mottled light gray (2.5Y 7/2), light yellowish brown (2.5Y 6/4), strong brown (7.5YR 5/6), and red (2.5YR 4/6) loam; weak medium subangular blocky structure; friable; about 20 percent iron concretions coated with thin clay films; about 10 percent slightly brittle nodules of plinthite; very strongly acid; gradual wavy boundary.

B23tcn—29 to 48 inches; light gray (10YR 7/2) loam; many medium distinct strong brown (7.5YR 5/6) and common medium prominent red (2.5YR 4/6) and yellowish red (5YR 4/8) mottles; moderate medium subangular blocky structure; friable; 12 to 15 percent iron concretions coated with thin clay films; 10 to 12 percent slightly brittle nodules of plinthite; very strongly acid; gradual wavy boundary.

B24tcn—48 to 60 inches; mottled red (2.5YR 4/6), light gray (10YR 7/2), light yellowish brown (10YR 6/4), and strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; 15 percent iron concretions; 15 percent slightly brittle nodules of plinthite; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid. Iron concretions range from 4 to 12 percent in the A horizon and from 5 to 20 percent in the B horizons.

The A horizon has hue of 10YR, value of 3, and chroma of 1 or 2.

The B1cn horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4. Texture is loam or sandy clay loam.

The B21tcn horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 3 through 6 and in some pedons has mottles in shades of gray and brown. The lower B2tcn horizons are mottled in shades of gray, yellow, brown, and red, or they have a matrix color of gray with mottles in shades of yellow, brown, and red. The B2tcn horizon has 5 to 15 percent plinthite in some parts. Texture is loam, sandy clay loam, or clay loam.

Saucier series

The Saucier series consists of moderately well drained soils with plinthite. These soils formed in loamy marine sediments on the Coastal Plain uplands. Permeability is moderate in the upper part of the subsoil and slow in the layers with plinthite. These soils have a water table 2 1/2 to 4 feet below the surface during winter. Slope ranges from 0 to 2 percent.

Saucier soils are geographically associated with Grady, Malbis, Notcher, and Robertsdale soils. Grady soils have clayey control sections and are poorly drained. Malbis and Notcher soils do not have mottles with chroma of 2 or less within 30 inches of the surface. Robertsdale soils are more poorly drained and have mottles with chroma of 2 or less within 20 inches of the surface.

Typical pedon of Saucier sandy loam, 0 to 2 percent slopes, is south of Irvington, 600 feet south and 475 feet west of the NE corner, SE1/4NE1/4 sec. 36, T. 6 S., R. 3 W.

A1—0 to 5 inches; dark gray (10YR 4/1) sandy loam; weak medium granular structure; friable; 2 to 5 percent iron concretions; strongly acid; clear wavy boundary.

B1—5 to 10 inches; light yellowish brown (2.5Y 6/4) loam; weak medium subangular blocky structure; friable; 5 percent iron concretions; strongly acid; gradual wavy boundary.

B21t—10 to 24 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds and concretions; 6 to 8 percent iron concretions; strongly acid; gradual wavy boundary.

B22t—24 to 30 inches; light yellowish brown (2.5Y 6/4) loam; common medium distinct strong brown (7.5YR 5/8) and few fine faint light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds and concretions; 10 to 15 percent iron concretions; 3 to 6 percent slightly brittle nodules of plinthite; strongly acid; gradual wavy boundary.

B23t—30 to 42 inches; mottled light yellowish brown (2.5Y 6/4), strong brown (7.5YR 5/6), light gray (10YR 7/2), yellowish brown (10YR 5/6), and red

(2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; slightly firm in place; thin patchy clay films on faces of peds and concretions; 15 percent iron concretions; 8 to 12 percent slightly brittle nodules of plinthite; very strongly acid; gradual wavy boundary.

B24t—42 to 61 inches; mottled yellowish brown (10YR 5/6), light gray (10YR 7/2), strong brown (7.5YR 5/6), yellowish red (5YR 4/6), and red (2.5YR 4/6) sandy clay loam; moderate coarse subangular structure parting to moderate medium subangular blocky; firm in place; 8 to 10 percent iron concretions; 15 to 20 percent slightly brittle nodules of plinthite; very strongly acid; clear wavy boundary.

B25t—61 to 72 inches; coarsely mottled red (10R 4/8), yellowish brown (10YR 5/8), light gray (10YR 7/1), and strong brown (7.5YR 5/6) sandy clay loam; strong coarse subangular blocky structure; very firm; gray areas in polygonal cracks are friable; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid. Depth to horizons with more than 5 percent plinthite ranges from 20 to 37 inches. Iron concretions range from 5 to 15 percent, but concretions are as much as 50 percent in pockets.

The A horizon has hue of 2.5Y or 10YR, value of 3 or 4, and chroma of 1 or 2.

The B1 horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4 or 6. Texture is sandy loam or loam.

The B21t and B22t horizons have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6 with mottles in shades of brown or gray in the lower part. Texture is loam. The B23t and underlying horizons are mottled in shades of brown, yellow, red, and gray. Areas of gray form polygonal patterns in some pedons. Plinthite ranges from 5 to 20 percent. Texture ranges from sandy loam or loam in the polygonal cracks to sandy clay loam or clay loam in the mass.

Shubuta series

The Shubuta series consists of well drained, moderately slowly permeable soils that formed in clayey marine sediments. These soils are on the Coastal Plain uplands. Slope ranges from 2 to 5 percent.

Shubuta soils are geographically associated with Benndale, Heidel, Smithton, and Troup soils. Benndale, Heidel, and Smithton soils have coarse-loamy control sections. Troup soils have sandy epipedons more than 40 inches thick.

Typical pedon of Shubuta sandy loam, in an area of Shubuta-Troup association, rolling, is 300 feet north and 575 east of the SW corner, NW1/4NW1/4 sec. 8, T. 2 S., R. 2 W.

A1—0 to 4 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; friable; medium acid; clear wavy boundary.

A2—4 to 6 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; few wormcasts; strongly acid; clear wavy boundary.

B21t—6 to 14 inches; yellowish red (5YR 4/6) clay loam; weak medium subangular blocky structure; friable; thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B22t—14 to 20 inches; yellowish red (5YR 5/6) clay loam; common medium distinct brownish yellow (10YR 6/6) and pale brown (10YR 6/3), and few fine prominent light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; firm; thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—20 to 44 inches; mottled yellowish red (5YR 5/6), pale brown (10YR 6/3), and light gray (10YR 7/2) clay loam; moderate medium subangular blocky structure; firm; thin clay films on faces of peds; very strongly acid; gradual wavy boundary.

B24t—44 to 82 inches; mottled light gray (10YR 7/1), red (2.5YR 5/6), yellow (10YR 7/6), and light yellowish brown (10YR 6/4) clay loam; weak coarse subangular blocky structure; firm; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout. Some pedons have up to 5 percent iron concretions in the upper part of the profile.

The A1 horizon has hue of 2.5Y or 10YR, value of 3 or 4, and chroma of 1 through 3. The A2 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma 3 through 6.

The upper part of the B2t horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 through 6, and chroma of 6 or 8. Few to common fine or medium gray, yellow, brown, and red mottles are in most pedons. The lower part of the B2t horizon has colors like those in the upper part, or it is mottled in shades of gray, yellow, brown, or red. In most pedons, the gray colors increase with depth. Texture is clay loam, clay, or silty clay.

These soils differ from typical Shubuta soils by having gray mottles near the top of the argillic horizon in most pedons. The gray mottles are believed to be inherent and not caused by wetness.

Smithton series

The Smithton series consists of poorly drained, moderately slowly permeable soils that formed in loamy marine sediments. These soils are on Coastal Plain uplands and stream terraces. They have a water table near the surface during winter and spring. Slope ranges from 0 to 2 percent.

Smithton soils are geographically associated with Alaga, Benndale, Bibb, Escambia, Harleston, Johnston, Osier, Pactolus, Shubuta, Suffolk, and Susquehanna soils. Alaga, Osier, and Pactolus soils are sandy throughout. Benndale, Escambia, Harleston, and Suffolk soils are better drained than Smithton soils. In addition, Escambia soils have more than 5 percent plinthite. Bibb soils do not have argillic horizons. Johnston soils have umbric epipedons. Shubuta and Susquehanna soils have more than 35 percent clay in their control sections.

Typical pedon of Smithton sandy loam, in an area of Smithton-Benndale association, undulating, is north of the Mount Vernon-Citronelle Highway, 700 feet east and 20 feet south of the NW corner, SW1/4SW1/4 sec. 21, T. 2 N., R. 2 W.

A1—0 to 7 inches; dark grayish brown (10YR 4/2) sandy loam; common dark yellowish brown (10YR 4/4) root stains; weak fine granular structure; friable; very strongly acid; clear wavy boundary.

A2g—7 to 17 inches; gray (10YR 5/1) sandy loam; common medium distinct brown (7.5YR 5/4) and few medium faint brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

B1g—17 to 26 inches; light gray (10YR 6/1) sandy loam; common medium faint pale brown (10YR 6/3), common medium distinct strong brown (7.5YR 5/6), and few fine distinct yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; thin patchy clay films along root channels; very strongly acid; gradual wavy boundary.

B21tg—26 to 47 inches; light gray (10YR 6/1) loam; few medium distinct pale olive (5Y 6/4), and many medium distinct strong brown (7.5YR 5/6) mottles; few pockets of light brownish gray (10YR 6/2) clean sand grains; weak coarse subangular blocky structure parting to weak medium subangular blocky; friable; thin patchy clay films along root channels and on faces of peds; very strongly acid; gradual wavy boundary.

B22tg—47 to 72 inches; light gray (10YR 7/1) and gray (10YR 5/1) silt loam; few fine distinct yellowish red (5YR 5/6), few fine faint yellowish brown, and common medium distinct strong brown (7.5YR 5/6) mottles; few pockets of clean sand grains; weak coarse subangular blocky structure; friable; thin patchy clay films on faces of peds; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid.

The A horizon has hue of 2.5Y or 10YR, value of 3 through 5, and chroma of 1 or 2; or hue is neutral, value is 3, and chroma is 0. Texture of the A horizon is sandy loam or loam.

The Btg horizon has hue of 2.5Y or 10YR, value of 5 through 7, and chroma of 1 or 2; or hue is neutral, value is 5 through 7, and chroma is 0. The Btg horizon has mottles in shades of yellow, brown, and red. Texture of the Btg horizon is fine sandy loam or loam in the upper part and includes silt loam in the lower part.

These soils differ from the typical Smithton soils by having silt loam textures below a depth of 40 inches in most pedons.

Suffolk series

The Suffolk series consists of well drained, moderately permeable soils that formed in loamy alluvial and marine sediments. These soils are on the Coastal Plain terraces and low uplands. Slope ranges from 0 to 2 percent.

Suffolk soils are geographically associated with Benndale, Bethera, Harleston, and Smithton soils. Benndale soils have coarse-loamy control sections. Bethera soils are poorly drained and have clayey control sections. Harleston soils have mottles with chroma of 2 or less within 30 inches of the surface. Smithton soils have coarse-loamy control sections and are poorly drained.

Typical pedon of Suffolk sandy loam, in an area of Suffolk-Smithton association, gently undulating, is near the confluence of Puppy Creek and the Escatawpa River, 550 feet south and 100 feet east of the NW corner, NE1/4NE1/4 sec. 37, T. 1 S., R. 4 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; friable; very strongly acid; clear wavy boundary.

A2—4 to 11 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; very strongly acid; gradual wavy boundary.

B1—11 to 16 inches; brownish yellow (10YR 6/6) sandy loam; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

B21t—16 to 42 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds; very strongly acid; gradual wavy boundary.

B3—42 to 48 inches; light yellowish brown (10YR 6/4) sandy loam; few medium distinct reddish yellow (7.5YR 6/6) mottles; weak medium subangular blocky structure; very friable; sand grains coated and bridged with clay; very strongly acid; clear wavy boundary.

C—48 to 66 inches; yellow (2.5Y 8/6) and white (10YR 8/2) sand; single grained; loose; very strongly acid.

Solum thickness ranges from 40 to 60 inches. Reaction is strongly acid or very strongly acid.

The A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The A2 horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4. Texture of the A horizon is mainly sandy loam but ranges to loamy sand.

The B1 horizon, where present, has hue of 10YR, value of 6, and chroma of 6. Texture is sandy loam or loam.

The B2t horizon has hue of 10YR, value of 5 or 6, and chroma of 6 or 8. Texture is loam, sandy clay loam, or clay loam.

The B3 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 through 8; or it is mottled in shades of yellow and brown. Texture is sandy loam or loam.

The C horizon has hue of 10YR, value of 5 through 8, and chroma of 2 through 8. Texture is loamy sand or sand. Some pedons have pockets of sandy loam.

Susquehanna series

The Susquehanna series consists of somewhat poorly drained, very slowly permeable soils that formed in clayey marine sediments. These soils are on the Coastal Plain uplands. Slope ranges from 2 to 8 percent.

Susquehanna soils are geographically associated with Harleston, Smithton, and Troup soils. Harleston and Smithton soils have coarse-loamy control sections. In addition, Smithton soils are poorly drained. Troup soils have sandy epipedons more than 40 inches thick.

Typical pedon of Susquehanna loam, in an area of Susquehanna-Harleston association, moderately undulating, is west of Wilmer on U.S. Highway 98, 150 feet east and 200 feet north of the SW corner, NE1/4SW1/4 sec. 20, T. 2 S., R. 4 W.

A1—0 to 3 inches; dark gray (10YR 4/1) loam; weak fine granular structure; friable; very strongly acid; clear wavy boundary.

A2—3 to 9 inches; brown (10YR 5/3) loam; few medium faint gray (10YR 5/1) mottles; weak fine granular structure; friable; very strongly acid; clear wavy boundary.

B21t—9 to 13 inches; yellowish red (5YR 5/6) silty clay; common medium distinct light gray (10YR 7/1) and few fine distinct red (2.5YR 4/6) mottles; weak fine and medium subangular blocky structure; firm; very strongly acid; gradual wavy boundary.

B22t—13 to 16 inches; mottled light gray (10YR 7/1), red (2.5YR 4/6), and yellowish red (5YR 5/6) silty clay loam; weak fine and medium subangular blocky structure; firm; very strongly acid; gradual wavy boundary.

B23t—16 to 30 inches; light gray (10YR 7/1) silty clay; common to many medium prominent red (2.5YR 4/6) and few fine distinct reddish yellow (7.5YR 6/6) mottles; moderate medium subangular blocky structure; very strongly acid; gradual wavy boundary.

B24t—30 to 66 inches; light gray (5Y 7/2) silty clay; common medium prominent red (10R 4/6) and few to common medium prominent light red (2.5YR 6/6) mottles; moderate coarse subangular blocky structure parting to moderate fine and medium subangular blocky; firm; very strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The A1 horizon has hue of 10YR, value of 3 through 5, and chroma of 1 or 2. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. Texture is sandy loam or loam.

The B21t horizon has hue of 7.5YR, 5YR, or 2.5YR, value of 5, and chroma of 6. Texture is clay loam, silty clay, or clay. Most pedons have few to common mottles in shades of gray, yellow, brown, and red. The B22t and underlying horizons have hue of 10YR, 2.5Y, or 5Y, value of 6 or 7, and chroma of 1 or 2, with mottles in shades of gray, yellow, brown, and red; or they are mottled in shades of gray, yellow, brown, or red. Texture is silty clay loam, silty clay, or clay.

These soils differ from typical Susquehanna soils by having mixed mineralogy. Dominant clay mineral is kaolinite with about 35 percent montmorillonite.

Troup series

The Troup series consists of well drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are on Coastal Plain uplands. Slopes range from 0 to 17 percent.

Troup soils are geographically associated with Bama, Benndale, Heidel, Pactolus, Shubuta, and Susquehanna soils. Bama, Benndale, and Heidel soils do not have thick sandy epipedons. Pactolus soils are more poorly drained than Troup soils and are sandy throughout. Shubuta and Susquehanna soils have more than 35 percent clay in their control sections.

Typical pedon of Troup loamy sand, 0 to 5 percent slopes, is 3/4 mile south of Cottage Hill Road on Schillinger Road, 20 feet north and 600 feet west of the SE corner, NW1/4NW1/4 sec. 7, T. 5 S., R. 2 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) loamy sand; weak medium granular structure; very friable; strongly acid; clear wavy boundary.

A21—4 to 15 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; very strongly acid; gradual wavy boundary.

A22—15 to 44 inches; brownish yellow (10YR 6/6) loamy sand; few pockets of very pale brown (10YR 7/3) clean sand grains; single grained; loose; very strongly acid; gradual wavy boundary.

A23—44 to 69 inches; reddish yellow (7.5YR 6/6) loamy sand; few to common very pale brown (10YR 7/4) clean sand grains; single grained; loose; very strongly acid; gradual wavy boundary.

B2t—69 to 86 inches; red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; very friable;

sand grains are coated and bridged with clay; very strongly acid.

Solum thickness is more than 80 inches. Reaction is strongly acid or very strongly acid throughout the profile.

The A horizon is 41 to 72 inches thick. The A1 horizon has hue of 10YR, value of 3 through 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR through 5YR, value of 4 through 6, and chroma of 3 through 8. Texture of the A horizon is loamy sand or loamy fine sand.

The Bt horizon has hue of 7.5YR through 2.5YR, value of 4 or 5, and chroma of 6 or 8. Texture is sandy loam or sandy clay loam.

Classification of the soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil taxonomy" (*13*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 19, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning moist, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Hapludults (*Hapl*, meaning simple horizons, plus *udult*, the suborder of Ultisols that has a udic moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine-loamy, siliceous, thermic Typic Hapludults.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Formation of the soils

This section describes the principal factors of soil formation and briefly discusses how these factors have affected the soils of Mobile County.

Soil is formed by the interaction of parent material, climate, flora and fauna, relief, and time. The dominance of any one of these factors varies from one location to another. These factors are interrelated, and the effect of any one of the soil forming factors is influenced to some degree by all of the others.

Parent material

Parent material is the unconsolidated mass of material in which a soil forms. It is a major influence on the chemical and mineral composition of the soil. Most of the soils in Mobile County formed in parent materials consisting of marine sediments.

Soils on uplands formed in place from marine sediments and include such soils as the Bama, Benndale, Malbis, Notcher, and Troup soils. Soils developed from water-transported materials are along most of the larger streams in the county. These include the soils developed

on stream terraces and in first bottoms on the flood plains. Soils developed on stream terraces include the Annemaine, Bethera, Izagora, and Suffolk soils, which have been in place for a long period and have developed distinct horizons. Soils of the first bottom are receiving new soil materials and have only a weakly developed profile. Bibb and Johnston are examples of these soils.

The geologic formations exposed in Mobile County (*9*) include deposits of Tertiary and Quaternary Ages. Formations of Tertiary Age exposed in the county are the Miocene and Pliocene. The Miocene, undifferentiated, outcrops extensively in the central and northern part of the county. These areas are characterized by rolling to hilly topography. The Miocene Formation is also exposed along Big Creek and its tributaries. The Pliocene Formation, youngest of the Tertiary material exposed in the county, includes only the Citronelle Formation. It is mainly in the central and southern parts of the county, but it caps high hills and ridges in the northern part of the county. It is characterized by nearly level to gently rolling topography. It consists mostly of sand and clay. The sand is generally brown, red, and orange, and the clay is gray, orange, and brown. The sand is locally crossbedded and consists of fine to very coarse grained, rounded and subangular quartz. The base of this formation usually has a ferruginous sandstone containing quartz and small amounts of chert gravel.

Formations of Quaternary Age exposed in the county include the Pleistocene and the Pleistocene and Holocene Formations (undivided). The soils developed in the Pleistocene Formation are well developed soils on high terraces. They have been subjected to the effects of other soil forming processes, and this has promoted their development. The Pleistocene and Holocene Formations (undivided) include weakly developed low terrace and alluvial soils and coastal deposits. These soils are receiving new soil material with each flood.

Climate

Temperature and precipitation are the primary climatic factors that influence the biological, chemical, and physical properties in the soil formation process. The climate is temperate bordering on subtropical, with an average rainfall of about 64 inches a year. Winters are usually short and mild with only a few days with temperatures below freezing. The soil freezes only to a depth of a few inches in some years. With relatively constant climatic conditions, climate causes few variations in the soils in Mobile County.

With high amounts of rainfall each year and the warm temperatures, the biological, chemical, and physical reactions in the soil proceed at a rapid rate. Water dissolves minerals, increases chemical reactions, supports biological activity, and transports mineral and organic residues through the soil. Most nutrients, soluble bases, and organic matter are leached beyond the root zone by the large amounts of water moving through the soil. Many fine particles, which resist further weathering, are moved from the surface layer down into the soil resulting in a sandy surface layer and a finer textured subsoil. Most coarse particles left in the upper part of the soil are quartz and are highly resistant to further weathering. As a result of these actions, most soils in termperate regions are low in natural fertility and organic matter content, are acid in reaction, are strongly weathered, and have sandy surface layers.

Flora and fauna

Living organisms, both plant and animal, are important forces in the soil forming process. Trees, grasses, earthworms, rodents, fungi, bacteria, and other forms of plant and animal life are largely determined by the other soil forming factors. Animal activity is largely confined to the surface layer of the soil. The soil is continually mixed by their activity, which helps water infiltration. Plant roots create channels through which air and water move more rapidly. This helps improve soil structure and increases the rate of chemical reactions in the soil. Roots are also important in recycling plant nutrients.

Micro-organisms are important in the decomposition of organic matter, which releases plant nutrients and chemicals into the soil. These are then used in the chemical reactions or weathering of the soil, and are either used by the plants or lost from the soil by leaching. Man is important to the future rate of soil formation through his activities that influence plant and animal populations in the soil.

Relief

Relief influences the formation of soils by its effect on internal drainage of the soil, runoff, erosion, and plant cover. The relief of Mobile County ranges from level or nearly level to moderately steep. Elevations range from sea level along the coast to about 340 feet above sea level near Citronelle. In the more level areas, water is removed slowly or remains ponded for long periods. In these areas, excess water slows soil formation.

On the sloping areas, excess surface water is removed more rapidly and the remaining water moves through the soil faster. However, as relief or steepness increases the amount of runoff increases and less water enters the soil. This reduces the amount of plant growth and chemical weathering. Soils having steep slopes may erode at about the same rate or in excess of the rate that soils form. Generally, these soils have less available water for plants and less vegetative cover. The hazard of erosion increases with increased slope.

Time

Time is required for the formation of soils having distinct horizons but is largely dependent on other soil-forming processes. Usually, soil formation requires less time in warm, humid areas with coarse-texured parent material.

Geologically, the soils in Mobile County are young. However, if degree of development is considered, the soils would range from fairly old to very young. The more mature soils on the uplands formed in marine sediments that have undergone considerable weathering. Most have fairly strong horizon development and are considered to have reached equilibrium with the environment. The Bama, Lucedale, and Susquehanna soils are examples of old soils in the county.

The soils of the county next in maturity are on stream terraces. These soils formed in alluvial materials that are no longer receiving new or additional soil material. These soils are weakly developed but have genetically related horizons. Examples of these soils in the county are the Izagora and Suffolk soils.

The youngest soils in the county developed in alluvium on first bottoms along streams. They are frequently flooded and receive additional sediments from each flood. They have not been changed enough by the soil forming process to have developed well defined horizons. Except for a well defined surface layer, these soils retain most of the characteristics of their sandy and loamy parent material. Bibb and Johnson are examples of these young soils.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch

of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Broad-base terrace. A ridge-type terrace built to control erosion by diverting runoff along the contour at a nonscouring velocity. The terrace is 10 to 20 inches high and 15 to 30 feet wide and has gently sloping sides, a rounded crown, and a dish-shaped channel along the upper side. It may be nearly level or have a grade toward one or both ends.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A map unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Compressible. Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is 40 or 80 inches (1 or 2 meters).

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave. Unstable walls of cuts made by earth-moving equipment. The soil sloughs easily.

Deferred grazing. A delay in grazing until range plants have reached a specified stage of growth. Grazing is deferred in order to increase the vigor of forage and to allow desirable plants to produce seed. Contrasts with continuous grazing and rotation grazing.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Excess salts. Excess water soluble salts. Excessive salts restrict the growth of most plants.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered, but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They

have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moderately fine textured (moderately heavy textured) soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20 percent.

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderate-*

ly rapid (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Piping. Moving water forms subsurface tunnels and pipe-like cavities in the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on exposure to repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade, whereas ironstone cannot be cut but can be broken or shattered with a spade. Plinthite is one form of the material that has been called laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Poorly graded. Refers to soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock. Soil scientists regard as soil only the part of the regolith that is modified by organisms and other soil-building forces. Most engineers describe the whole regolith, even to a great depth, as "soil."

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slow intake. The slow movement of water into the soil.

Slow refill. The slow filling of ponds, resulting from restricted permeability in the soil.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *very coarse sand* (2.0 millimeters to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil, or partly worked into the soil, to provide protection from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use or management.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further

divided by specifying "coarse," "fine," or "very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to a soil or soil material consisting of particles well distributed over a wide range in size or diameter. Such a soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION DATA

[Recorded 1951-75 at Mobile, Ala.]

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Temperature: Average	Temperature: 2 years in 10 will have-- Maximum temperature higher than--	Temperature: 2 years in 10 will have-- Minimum temperature lower than--	Temperature: Average number of growing degree days[1]	Precipitation: Average	Precipitation: 2 years in 10 will have-- Less than--	Precipitation: 2 years in 10 will have-- More than--	Precipitation: Average number of days with 0.10 inch or more	Precipitation: Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	61.5	41.7	51.6	78	18	182	4.39	2.40	6.02	7	.1
February---	64.2	43.7	54.0	80	21	186	5.13	3.44	6.68	8	.2
March------	70.1	49.6	59.9	84	29	320	6.12	2.92	8.72	8	.1
April------	78.1	57.7	67.9	89	39	537	5.18	1.76	7.92	5	.0
May--------	85.1	64.8	75.0	95	48	775	4.63	2.40	6.44	6	.0
June-------	90.1	70.7	80.4	99	59	912	5.34	2.54	7.63	8	.0
July-------	91.1	73.0	82.1	99	67	995	7.80	5.16	10.20	12	.0
August-----	90.7	72.7	81.7	98	65	983	6.89	4.59	8.99	10	.0
September--	86.9	68.9	77.9	96	54	837	6.52	2.97	9.40	7	.0
October----	79.7	58.1	68.9	92	38	586	2.51	.49	4.06	4	.0
November---	69.5	47.8	58.7	84	27	269	3.30	1.04	5.09	5	.0
December---	63.3	43.5	53.4	79	20	181	5.77	3.64	7.70	8	.1
Yearly:											
Average--	77.5	57.7	67.6	---	---	---	---	---	---	---	---
Extreme--	---	---	---	100	16	---	---	---	---	---	---
Total----	---	---	---	---	---	6,763	63.58	53.98	72.81	88	.5

[1]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F)

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded 1951-75 at Mobile, Ala.]

Probability	Temperature: 24° F or lower	Temperature: 28° F or lower	Temperature: 32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	February 12	March 9	March 21
2 years in 10 later than--	February 3	February 27	March 14
5 years in 10 later than--	January 16	February 7	February 28
First freezing temperature in fall:			
1 year in 10 earlier than--	December 1	November 12	November 3
2 years in 10 earlier than--	December 11	November 21	November 10
5 years in 10 earlier than--	December 31	December 9	November 25

TABLE 3.--GROWING SEASON

[Recorded 1951-75 at Mobile, Ala.]

Probability	Daily minimum temperature during growing season: Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	307	269	238
8 years in 10	319	280	249
5 years in 10	347	303	269
2 years in 10	>365	327	289
1 year in 10	>365	342	300

TABLE 4.--POTENTIALS AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP FOR SPECIFIED USES

Map unit	Percent of county	Cultivated farm crops	Specialty crops	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
1. Troup-Heidel-Bama------	27	Good to fair: droughty.	Good to fair: droughty.	Good------------	Good------------	Good to fair: too sandy.	Good.
2. Troup-Benndale-Smithton.	31	Fair to poor: droughty, slope, wetness.	Poor: droughty, slope, wetness.	Good------------	Fair to poor: slope, wetness.	Fair: slope, too sandy.	Good.
3. Dorovan-Johnson-Levy.	9	Poor: wetness, floods.	Poor: wetness, floods.	Fair: wetness, floods.	Poor: wetness, floods.	Poor: wetness, floods.	Fair: wetness, floods.
4. Izagora-Bethera-Suffolk.	9	Good to fair: wetness.	Good to fair: wetness.	Good------------	Poor: wetness, floods.	Fair to poor: wetness.	Fair: wetness.
5. Notcher-Saucier-Malbis.	5	Good------------	Good------------	Good------------	Good to fair: wetness, percs slowly.	Good------------	Good.
6. Bayou-Escambia-Harleston.	6	Fair to poor: wetness.	Fair to poor: wetness.	Fair: wetness.	Poor: wetness.	Poor to fair: wetness, percs slowly.	Good.
7. Urban land-Smithton-Benndale	5	Poor: small areas.	Poor: small areas.	Poor: small areas.	Fair: wetness.	Fair: wetness.	Poor: small areas.
8. Shubuta-Troup-Benndale.	5	Fair: slope, droughty.	Fair: slope, droughty.	Good------------	Good to fair: low strength, percs slowly.	Fair: slope, percs slowly, too sandy.	Good.
9. Axis-Lafitte------	3	Poor: wetness, floods.	Poor: wetness, floods.	Poor: wetness, floods.	Poor: wetness, floods.	Poor: wetness, floods.	Fair: wetness, floods.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2	Alaga-Harleston association, undulating	7,680	1.0
3	Axis mucky sandy clay loam, 0 to 1 percent slopes	10,630	1.3
4	Bama sandy loam, 0 to 2 percent slopes	15,325	1.9
5	Bama sandy loam, 2 to 5 percent slopes	9,807	1.2
6	Bama sandy loam, 5 to 8 percent slopes	2,295	0.3
7	Bayou-Escambia association, gently undulating	26,828	3.4
8	Beaches	536	0.1
9	Benndale sandy loam, 0 to 2 percent slopes	10,812	1.4
10	Benndale sandy loam, 2 to 5 percent slopes	11,036	1.4
11	Benndale sandy loam, 5 to 8 percent slopes	2,533	0.3
12	Benndale-Urban land complex, 0 to 8 percent slopes	5,906	0.7
13	Dorovan-Bibb association, 0 to 1 percent slopes	9,390	1.2
14	Dorovan-Levy association, 0 to 1 percent slopes	47,557	6.1
15	Duckston sand, 0 to 2 percent slopes	941	0.1
16	Escambia sandy loam, 0 to 2 percent slopes	7,455	0.9
17	Escambia-Urban land complex, 0 to 2 percent slopes	2,213	0.3
18	Fripp sand, rolling	826	0.1
19	Grady loam, 0 to 1 percent slopes	1,882	0.2
20	Harleston sandy loam, 0 to 2 percent slopes	9,264	1.2
21	Harleston-Urban land complex, 0 to 2 percent slopes	4,854	0.6
22	Heidel sandy loam, 0 to 2 percent slopes	12,128	1.5
23	Heidel sandy loam, 2 to 5 percent slopes	28,449	3.6
24	Heidel sandy loam, 5 to 8 percent slopes	6,710	0.8
25	Izagora-Annemaine association, moderately undulating	7,440	0.9
26	Izagora-Bethera association, gently undulating	33,436	4.2
27	Johnston-Pamlico association, 0 to 1 percent slopes	15,112	1.9
28	Lafitte muck, 0 to 1 percent slopes	9,188	1.2
29	Lucedale sandy loam, 0 to 2 percent slopes	3,837	0.5
30	Malbis sandy loam, 0 to 2 percent slopes	6,166	0.8
31	Malbis sandy loam, 2 to 5 percent slopes	4,681	0.6
32	Notcher sandy loam, 0 to 2 percent slopes	7,260	0.9
33	Notcher sandy loam, 2 to 5 percent slopes	7,922	1.0
34	Notcher sandy loam, 5 to 8 percent slopes	1,548	0.2
35	Osier loamy sand, 0 to 2 percent slopes	1,648	0.2
36	Pactolus loamy sand, 0 to 2 percent slopes	4,908	0.6
37	Pamlico-Bibb complex, 0 to 1 percent slopes	17,052	2.2
38	Pits	1,556	0.2
39	Poarch sandy loam, 0 to 2 percent slopes	2,920	0.4
40	Psamments	384	*
41	Robertsdale loam, 0 to 1 percent slopes	1,736	0.2
42	Saucier sandy loam, 0 to 2 percent slopes	11,062	1.4
43	Shubuta sandy loam, 2 to 5 percent slopes	608	0.1
44	Shubuta-Troup association, rolling	33,465	4.2
45	Smithton sandy loam, 0 to 1 percent slopes	11,600	1.5
46	Smithton-Urban land complex, 0 to 1 percent slopes	9,774	1.2
47	Smithton-Benndale association, undulating	29,192	3.7
48	Suffolk-Smithton association, gently undulating	16,983	2.1
49	Susquehanna-Harleston association, moderately undulating	3,330	0.4
50	Troup loamy sand, 0 to 5 percent slopes	60,345	7.6
51	Troup loamy sand, 5 to 8 percent slopes	15,616	2.0
52	Troup-Heidel complex, 8 to 12 percent slopes	34,458	4.3
53	Troup-Urban land complex, 0 to 8 percent slopes	7,200	0.9
54	Troup-Urban land complex, 8 to 12 percent slopes	857	0.1
55	Troup-Benndale association, rolling	147,357	18.7
56	Troup-Heidel association, undulating	42,920	5.4
57	Urban land	5,679	0.7
	Water	1,175	0.1
	Total	793,472	100.0

* Less than 0.1 percent.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Corn	Soybeans	Irish potatoes	Wheat	Pecans	Bahiagrass	Improved Bermuda-grass
	Bu	Bu	Cwt	Bu	Cwt	AUM[1]	AUM[1]
2:[2]							
Alaga	60	---	---	20	---	7.0	7.5
Harleston	85	30	---	30	---	8.5	10.5
3 Axis	---	---	---	---	---	---	---
4 Bama	100	35	---	40	8.0	10.0	10.0
5 Bama	95	35	---	35	8.0	10.0	10.0
6 Bama	80	30	---	30	6.5	9.0	9.0
7:[2]							
Bayou	40	20	---	---	---	6.0	---
Escambia	100	40	200	30	---	9.5	9.0
8:[2] Beaches							
9 Benndale	90	35	100	30	6.0	9.0	11.0
10 Benndale	85	30	80	30	6.0	8.5	10.5
11 Benndale	75	25	---	25	5.0	8.0	9.0
12 Benndale-Urban land	---	---	---	---	---	---	---
13:[2]							
Dorovan	---	---	---	---	---	---	---
Bibb	---	---	---	---	---	---	---
14:[2]							
Dorovan	---	---	---	---	---	---	---
Levy	---	---	---	---	---	---	---
15 Duckston	---	---	---	---	---	---	---
16 Escambia	100	40	200	30	---	9.5	9.0
17 Escambia-Urban land	---	---	---	---	---	---	---
18 Fripp	---	---	---	---	---	---	---
19 Grady	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn	Soybeans	Irish potatoes	Wheat	Pecans	Bahiagrass	Improved Bermuda-grass
	Bu	Bu	Cwt	Bu	Cwt	AUM[1]	AUM[1]
20 Harleston	90	35	---	35	5.0	9.0	11.0
21 Harleston-Urban land	---	---	---	---	---	---	---
22 Heidel	90	30	---	30	7.0	9.0	11.0
23 Heidel	85	25	---	25	6.5	8.0	10.0
24 Heidel	75	25	---	25	6.0	7.0	8.5
25:[2]							
Izagora	90	30	---	30	---	9.0	8.0
Annemaine	90	35	---	35	---	9.0	9.5
26:[2]							
Izagora	100	35	---	30	---	9.0	8.0
Bethera	---	---	---	---	---	8.0	---
27:[2]							
Johnston	---	---	---	---	---	---	---
Pamlico	---	---	---	---	---	---	---
28 Lafitte	---	---	---	---	---	---	---
29 Lucedale	95	40	---	40	8.0	10.0	10.0
30 Malbis	100	40	200	40	7.0	9.0	10.0
31 Malbis	95	35	180	35	7.0	8.5	9.5
32 Notcher	100	40	200	40	8.0	8.5	9.0
33 Notcher	95	35	180	35	7.0	8.5	9.0
34 Notcher	80	30	---	30	6.0	8.0	8.0
35 Osier	---	---	---	---	---	5.0	---
36 Pactolus	65	25	---	25	---	7.0	---
37 Pamlico-Bibb	---	---	---	---	---	---	---
38:[2] Pits							
39 Poarch	100	35	200	35	7.0	9.5	9.0
40:[2] Psamments							

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Corn	Soybeans	Irish potatoes	Wheat	Pecans	Bahiagrass	Improved Bermuda-grass
	Bu	Bu	Cwt	Bu	Cwt	AUM[1]	AUM[1]
41----------------------- Robertsdale	90	35	180	30	---	8.0	---
42----------------------- Saucier	100	40	200	35	6.0	9.0	8.0
43----------------------- Shubuta	60	25	---	---	---	7.5	9.5
44:[2] Shubuta-----------------	60	20	---	---	---	7.5	8.0
Troup-------------------	55	20	---	---	---	7.0	7.0
45----------------------- Smithton	40	20	---	---	---	7.5	---
46----------------------- Smithton-Urban land	---	---	---	---	---	---	---
47:[2] Smithton----------------	40	20	---	---	---	7.5	---
Benndale----------------	75	25	---	25	---	8.5	10.5
48:[2] Suffolk-----------------	100	35	---	35	---	9.0	9.5
Smithton----------------	40	20	---	---	---	7.5	---
49:[2] Susquehanna-------------	---	---	---	---	---	5.5	---
Harleston---------------	85	30	---	---	---	8.0	9.0
50----------------------- Troup	65	25	---	25	4.0	7.5	7.5
51----------------------- Troup	55	20	---	20	3.0	7.0	7.0
52----------------------- Troup-Heidel	---	---	---	---	---	5.0	6.5
53----------------------- Troup-Urban land	---	---	---	---	---	---	---
54----------------------- Troup-Urban land	---	---	---	---	---	---	---
55:[2] Troup-------------------	---	---	---	---	---	5.0	6.5
Benndale----------------	60	20	---	---	---	7.5	8.0
56:[2] Troup-------------------	65	25	---	---	4.0	7.5	7.5
Heidel------------------	85	25	---	25	6.0	8.0	10.0
57:[2] Urban land							

[1] Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

[2] See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available. Site index was calculated at age 50 for all species]

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
2[1]:								
Alaga	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	80	Slash pine,
						Longleaf pine	65	longleaf pine,
						Slash pine	80	loblolly pine.
Harleston	2w	Slight	Moderate	Slight	Slight	Loblolly pine	90	Loblolly pine,
						Slash pine	90	slash pine,
						Sweetgum	75	sweetgum,
								American sycamore.
4, 5, 6 Bama	2o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine,
						Slash pine	90	slash pine,
						Longleaf pine	75	longleaf pine.
7[1]:								
Bayou	5w	Slight	Moderate	Severe	Moderate	Loblolly pine	65	Loblolly pine,
						Slash pine	65	slash pine.
						Longleaf pine	45	
Escambia	2w	Slight	Moderate	Slight	Moderate	Loblolly pine	90	Loblolly pine,
						Longleaf pine	70	slash pine,
						Slash pine	90	sweetgum.
						Sweetgum	90	
9, 10, 11 Benndale	2o	Slight	Slight	Slight	Slight	Loblolly pine	94	Loblolly pine,
						Longleaf pine	79	longleaf pine,
						Slash pine	94	slash pine.
12[1]:								
Benndale	2o	Slight	Slight	Slight	Slight	Loblolly pine	94	Loblolly pine,
						Longleaf pine	79	longleaf pine,
						Slash pine	94	slash pine.
Urban land.								
13[1]:								
Dorovan	4w	Slight	Severe	Severe	Moderate	Water tupelo	60	---
						Sweetbay	---	
Bibb	2w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2]	90	Loblolly pine,[4]
						Slash pine[2]	90	slash pine,[4]
						Sweetgum[2]	90	sweetgum.[4]
						Water oak[2]	90	
14[1]:								
Dorovan	4w	Slight	Severe	Severe	Moderate	Water tupelo	60	---
						Sweetbay	---	
Levy	3w	Slight	Severe	Severe	Moderate	Water tupelo	70	---
						Sweetgum	---	
						Red maple	---	
						Baldcypress	---	
16 Escambia	2w	Slight	Moderate	Slight	Moderate	Loblolly pine	90	Loblolly pine,
						Longleaf pine	70	slash pine,
						Slash pine	90	sweetgum.
						Sweetgum	90	
17[1]:								
Escambia	2w	Slight	Moderate	Slight	Moderate	Loblolly pine	90	Loblolly pine,
						Longleaf pine	70	slash pine,
						Slash pine	90	sweetgum.
						Sweetgum	90	
Urban land.								

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Trees to plant
19 Grady	2w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2] Slash pine[2] Sweetgum[2]	90 88 90	Loblolly pine,[4] slash pine,[4] sweetgum.[4]
20 Harleston	2w	Slight	Moderate	Slight	Slight	Loblolly pine Slash pine Sweetgum	90 90 75	Loblolly pine, slash pine, sweetgum, American sycamore.
21[1]:								
Harleston	2w	Slight	Moderate	Slight	Slight	Loblolly pine Slash pine Sweetgum	90 90 75	Loblolly pine, slash pine, sweetgum, American sycamore.
Urban land.								
22, 23, 24 Heidel	2o	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine Slash pine Longleaf pine	90 72 90 75	Loblolly pine, slash pine, longleaf pine.
25[1]:								
Izagora	2w	Slight	Moderate	Moderate	Slight	Loblolly pine Slash pine Sweetgum	90 90 90	Loblolly pine, slash pine, sweetgum, yellow-poplar.
Annemaine	3w	Slight	Moderate	Slight	Slight	Loblolly pine Shortleaf pine Yellow-poplar Sweetgum Slash pine	80 70 90 80 80	Yellow-poplar, loblolly pine, sweetgum, slash pine.
26[1]:								
Izagora	2w	Slight	Moderate	Moderate	Slight	Loblolly pine Slash pine Sweetgum	90 90 90	Loblolly pine, slash pine, sweetgum, yellow-poplar.
Bethera	2w	Slight	Severe	Severe	Moderate	Loblolly pine Slash pine Longleaf pine Sweetgum	92 90 71 90	Loblolly pine, slash pine, longleaf pine, sweetgum.
27[1]:								
Johnston	1w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2] Slash pine[2] Sweetgum[2] Water oak[2] Water tupelo Baldcypress	97 95 111 103 --- ---	Loblolly pine,[4] slash pine,[4] baldcypress,[4] sweetgum,[4] green ash.[4]
Pamlico	4w	Slight	Severe[3]	Severe[3]	Moderate	Slash pine[2] Baldcypress Water tupelo	70 --- ---	Slash pine,[4] loblolly pine,[4] baldcypress.[4]
29 Lucedale	2o	Slight	Slight	Slight	Slight	Loblolly pine Longleaf pine Slash pine	90 75 90	Loblolly pine, longleaf pine, slash pine.
30, 31 Malbis	2o	Slight	Slight	Slight	Slight	Loblolly pine Slash pine Longleaf pine	90 90 80	Loblolly pine, slash pine, longleaf pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
32, 33, 34 Notcher	2o	Slight	Slight	Slight	Slight	Loblolly pine Slash pine Longleaf pine	90 90 75	Loblolly pine, slash pine, longleaf pine.
35 Osier	3w	Slight	Severe[3]	Severe[3]	Moderate	Slash pine[2] Loblolly pine[2] Longleaf pine[2]	80 80 68	Slash pine,[4] loblolly pine.[4]
36 Pactolus	3w	Slight	Moderate	Moderate	Slight	Loblolly pine Longleaf pine Slash pine	84 70 83	Loblolly pine, slash pine.
37[1]:								
Pamlico	4w	Slight	Severe[3]	Severe[3]	Moderate	Slash pine[2] Baldcypress Water tupelo	70 --- ---	Slash pine,[4] loblolly pine,[4] baldcypress.
Bibb	2w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2] Slash pine[2] Sweetgum[2] Water oak[2]	90 90 90 90	Loblolly pine, slash pine, sweetgum.
39 Poarch	2o	Slight	Slight	Slight	Slight	Slash pine Loblolly pine Longleaf pine	90 90 73	Slash pine, loblolly pine, longleaf pine.
41 Robertsdale	2w	Slight	Moderate	Slight	Moderate	Slash pine Loblolly pine Sweetgum Blackgum Southern red oak	90 90 83 --- ---	Slash pine, loblolly pine, sweetgum.
42 Saucier	2w	Slight	Moderate	Slight	Slight	Loblolly pine Longleaf pine Slash pine	90 70 9	Loblolly pine, slash pine.
43 Shubuta	3c	Slight	Moderate	Slight	Slight	Loblolly pine Shortleaf pine Longleaf pine Slash pine	80 70 70 80	Loblolly pine, shortleaf pine, slash pine.
44[1]:								
Shubuta	3c	Slight	Moderate	Slight	Slight	Loblolly pine Shortleaf pine Longleaf pine Slash pine	80 70 70 80	Loblolly pine, shortleaf pine, slash pine.
Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine Longleaf pine Slash pine	82 64 84	Loblolly pine, longleaf pine, slash pine.
45 Smithton	2w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2] Slash pine[2] Sweetgum[2] Cherrybark oak Water oak	90 90 90 90 90	Loblolly pine,[4] slash pine,[4] sweetgum.[4]
46[1]:								
Smithton	2w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2] Slash pine[2] Sweetgum[2] Cherrybark oak Water oak	90 90 90 90 90	Loblolly pine,[4] slash pine,[4] sweetgum.[4]
Urban land.								

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
47[1]:								
Smithton	2w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2]	90	Loblolly pine,[4]
						Slash pine[2]	90	slash pine,[4]
						Sweetgum[2]	90	sweetgum.[4]
						Cherrybark oak	90	
						Water oak	90	
Benndale	2o	Slight	Slight	Slight	Slight	Loblolly pine	94	Loblolly pine,
						Longleaf pine	79	slash pine,
						Slash pine	94	longleaf pine.
48[1]:								
Suffolk	2o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine,
						Slash pine	90	slash pine.
						Longleaf pine	80	
Smithton	2w	Slight	Severe[3]	Severe[3]	Moderate	Loblolly pine[2]	90	Loblolly pine,[4]
						Slash pine[2]	90	slash pine,[4]
						Sweetgum[2]	90	sweetgum.[4]
						Cherrybark oak	90	
						Water oak	90	
49[1]:								
Susquehanna	3c	Slight	Moderate	Slight	Slight	Loblolly pine	80	Loblolly pine,
						Shortleaf pine	68	slash pine.
						Slash pine	80	
						Longleaf pine	65	
Harleston	2w	Slight	Moderate	Slight	Slight	Loblolly pine	90	Loblolly pine,
						Slash pine	90	slash pine,
						Sweetgum	75	sweetgum,
								American sycamore.
50, 51 Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	82	Loblolly pine,
						Longleaf pine	64	longleaf pine,
						Slash pine	84	slash pine.
52[1]:								
Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	82	Loblolly pine,
						Longleaf pine	64	longleaf pine,
						Slash pine	84	slash pine.
Heidel	2o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine,
						Shortleaf pine	72	slash pine,
						Slash pine	90	longleaf pine.
						Longleaf pine	75	
53[1], 54[1]:								
Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	82	Loblolly pine,
						Longleaf pine	64	longleaf pine,
						Slash pine	84	slash pine.
Urban land.								
55[1]:								
Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	82	Loblolly pine,
						Longleaf pine	64	longleaf pine,
						Slash pine	84	slash pine.
Benndale	2o	Slight	Slight	Slight	Slight	Loblolly pine	94	Loblolly pine,
						Longleaf pine	79	slash pine,
						Slash pine	94	longleaf pine.

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
56[1]:								
Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	82	Loblolly pine, longleaf pine, slash pine.
						Longleaf pine	64	
						Slash pine	84	
Heidel	2o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine, slash pine, longleaf pine.
						Shortleaf pine	72	
						Slash pine	90	
						Longleaf pine	75	

[1] See map unit description for composition and behavior characteristics.
[2] Potential productivity attainable only on areas with adequate surface drainage.
[3] Equipment restrictions and seedling mortality rates are moderate on areas with adequate surface drainage.
[4] Tree planting is feasible only on areas with adequate surface drainage.

TABLE 8.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2[1]:						
Alaga	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: too sandy.
Harleston	Moderate: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: wetness.	Slight	Moderate: wetness.
3 Axis	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
4, 5 Bama	Slight	Slight	Slight	Slight	Moderate: low strength.	Slight.
6 Bama	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
7[1]:						
Bayou	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Escambia	Severe: wetness.	Moderate: wetness, low strength.	Severe: wetness.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: wetness.
8[1]. Beaches						
9, 10 Benndale	Slight	Slight	Slight	Slight	Moderate: low strength.	Slight.
11 Benndale	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
12[1]:						
Benndale	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Urban land.						
13[1]:						
Dorovan	Severe: excess humus, wetness, floods.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, excess humus.
Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.
14[1]:						
Dorovan	Severe: excess humus, wetness, floods.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, excess humus.
Levy	Severe: floods, wetness.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: wetness, floods.
15 Duckston	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods, too sandy.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
16 Escambia	Severe: wetness.	Moderate: wetness, low strength.	Severe: wetness.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: wetness.
17[1]:						
Escambia	Severe: wetness.	Moderate: wetness, low strength.	Severe: wetness.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: wetness.
Urban land.						
18 Fripp	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: slope, floods.	Moderate: floods, slope.	Severe: slope, too sandy.
19 Grady	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.
20 Harleston	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Slight	Moderate: wetness.
21[1]:						
Harleston	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Severe: wetness.	Slight	Moderate: wetness.
Urban land.						
22, 23 Heidel	Slight	Slight	Slight	Slight	Slight	Slight.
24 Heidel	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
25[1]:						
Izagora	Severe: wetness, too clayey.	Severe: floods.	Severe: floods, wetness, low strength.	Severe: floods.	Severe: low strength.	Moderate: wetness.
Annemaine	Moderate: wetness, too clayey.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: low strength.	Moderate: wetness.
26[1]:						
Izagora	Severe: wetness, too clayey.	Severe: floods.	Severe: floods, wetness, low strength.	Severe: floods.	Severe: low strength.	Moderate: wetness.
Bethera	Severe: floods, too clayey, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: wetness, floods.
27[1]:						
Johnston	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods, excess humus.
Pamlico	Severe: floods, wetness.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, excess humus.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
28 Lafitte	Severe: floods, cutbanks cave, wetness.	Severe: floods, excess humus, low strength.	Severe: floods, excess humus, low strength.	Severe: floods, excess humus, low strength.	Severe: floods, excess humus, low strength.	Severe: wetness, floods, excess humus.
29 Lucedale	Slight	Slight	Slight	Slight	Slight	Slight.
30, 31 Malbis	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Moderate: low strength.	Slight.
32, 33 Notcher	Moderate: wetness, too clayey.	Moderate: low strength.	Moderate: wetness, low strength.	Moderate: low strength.	Moderate: low strength.	Slight.
34 Notcher	Moderate: wetness, too clayey.	Moderate: low strength.	Moderate: wetness, low strength.	Moderate: slope, low strength.	Moderate: low strength.	Slight.
35 Osier	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.
36 Pactolus	Severe: wetness, cutbanks cave.	Severe: floods.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, too sandy.
37[1]:						
Pamlico	Severe: floods, wetness.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, excess humus.
Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods.
38[1]. Pits						
39 Poarch	Moderate: wetness.	Moderate: low strength.	Moderate: wetness.	Moderate: low strength.	Moderate: low strength.	Slight.
40[1]. Psamments						
41 Robertsdale	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
42 Saucier	Moderate: wetness, too clayey.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: low strength.	Slight.
43 Shubuta	Severe: too clayey.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Severe: low strength.	Slight.
44[1]:						
Shubuta	Severe: too clayey.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Severe: low strength.	Slight.
Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: too sandy.
45 Smithton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
46[1]:						
Smithton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
46[1]: Urban land.						
47[1]: Smithton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Benndale	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
48[1]: Suffolk	Slight	Moderate: low strength.	Slight	Moderate: low strength.	Severe: low strength.	Slight.
Smithton	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
49[1]: Susquehanna	Severe: too clayey, wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, corrosive, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
Harleston	Moderate: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: wetness.	Slight	Moderate: wetness.
50 Troup	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: too sandy.
51 Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: too sandy.
52[1]: Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, too sandy.
Heidel	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
53[1]: Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: too sandy.
Urban land.						
54[1]: Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, too sandy.
Urban land.						
55[1]: Troup	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, too sandy.
Benndale	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
56[1]: Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: too sandy.
Heidel	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
57[1]. Urban land						

[1] See map unit description for composition and behavior characteristics.

TABLE 9.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2[1]:					
Alaga	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.
Harleston	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
3 Axis	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: thin layer, small stones.
4 Bama	Slight	Moderate: seepage.	Slight	Slight	Good.
5, 6 Bama	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
7[1]:					
Bayou	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Escambia	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Good.
8[1]. Beaches					
9 Benndale	Slight	Moderate: seepage.	Slight	Slight	Good.
10, 11 Benndale	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
12[1]:					
Benndale	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
Urban land.					
13[1]:					
Dorovan	Severe: floods, wetness.	Severe: floods, excess humus, wetness.	Severe: floods, seepage, wetness.	Severe: floods, wetness.	Poor: wetness, excess humus.
Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
14[1]:					
Dorovan	Severe: floods, wetness.	Severe: floods, excess humus, wetness.	Severe: floods, seepage, wetness.	Severe: floods, wetness.	Poor: wetness, excess humus.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
14[1]:					
Levy	Severe: floods, percs slowly, wetness.	Severe: floods, wetness.	Severe: floods, too clayey, wetness.	Severe: floods, wetness.	Poor: wetness.
15 Duckston	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
16 Escambia	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Good.
17[1]:					
Escambia	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Good.
Urban land.					
18 Fripp	Moderate: slope, floods.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
19 Grady	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness, too clayey.
20 Harleston	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
21[1]:					
Harleston	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Urban land.					
22, 23, 24 Heidel	Slight	Moderate: seepage, slope.	Moderate: seepage.	Slight	Good.
25[1]:					
Izagora	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Annemaine	Severe: percs slowly, wetness.	Severe: wetness.	Severe: too clayey, wetness.	Severe: floods, wetness.	Poor: too clayey.
26[1]:					
Izagora	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
Bethera	Severe: floods, wetness, percs slowly.	Slight	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
27[1]:					
Johnston	Severe: floods, wetness.	Severe: seepage, wetness.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Poor: wetness.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
27[1]:					
Pamlico	Severe: wetness, floods.	Severe: wetness, floods, excess humus.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness, excess humus, hard to pack.
28 Lafitte	Severe: floods, wetness.	Severe: floods, seepage, excess humus.	Severe: floods, wetness, excess humus.	Severe: floods, wetness, seepage.	Poor: wetness, excess humus.
29 Lucedale	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
30 Malbis	Severe: wetness, percs slowly.	Slight	Moderate: wetness.	Moderate: wetness.	Good.
31 Malbis	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Good.
32 Notcher	Severe: percs slowly, wetness.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Good.
33, 34 Notcher	Severe: percs slowly, wetness.	Moderate: slope, seepage.	Severe: wetness.	Moderate: wetness.	Good.
35 Osier	Severe: floods, wetness.	Severe: floods, seepage.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness, too sandy.
36 Pactolus	Severe: wetness.	Severe: wetness, seepage.	Severe: seepage, wetness.	Severe: seepage, wetness.	Fair: too sandy.
37[1]:					
Pamlico	Severe: wetness, floods.	Severe: wetness, floods, excess humus.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness, excess humus, hard to pack.
Bibb	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
38[1] Pits					
39 Poarch	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Moderate: wetness.	Good.
40[1]. Psamments					
41 Robertsdale	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
42 Saucier	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Fair: too clayey.
43 Shubuta	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Poor: too clayey.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
44[1]:					
Shubuta	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Poor: too clayey.
Troup	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
45 Smithton	Severe: percs slowly, wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
46[1]:					
Smithton	Severe: percs slowly, wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
Urban land.					
47[1]:					
Smithton	Severe: percs slowly, wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
Benndale	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
48[1]:					
Suffolk	Slight	Severe: seepage.	Severe: seepage.	Slight	Good.
Smithton	Severe: percs slowly, wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.
49[1]:					
Susquehanna	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, wetness.	Moderate: wetness.	Poor: too clayey.
Harleston	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
50, 51 Troup	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
52[1]:					
Troup	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy, slope.
Heidel	Moderate: slope.	Severe: slope.	Moderate: seepage.	Moderate: slope.	Fair: slope.
53[1]:					
Troup	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
Urban land.					
54[1]:					
Troup	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy, slope.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
54[1]:					
Urban land.					
55[1]:					
Troup	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy, slope.
Benndale	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
56[1]:					
Troup	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
Heidel	Slight	Moderate: seepage, slope.	Moderate: seepage.	Slight	Good.
57[1].					
Urban land					

[1] See map unit description for composition and behavior characteristics.

TABLE 10.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
2[1]:				
Alaga	Fair: low strength.	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Harleston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
3 Axis	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
4, 5, 6 Bama	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey, thin layer.
7[1]:				
Bayou	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
Escambia	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
8[1]. Beaches				
9, 10, 11 Benndale	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
12[1]:				
Benndale	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
13[1]:				
Dorovan	Poor: low strength, wetness.	Poor: excess humus.	Unsuited: excess fines, excess humus.	Poor: excess humus, wetness.
Bibb	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
14[1]:				
Dorovan	Poor: low strength, wetness.	Poor: excess humus.	Unsuited: excess fines, excess humus.	Poor: excess humus, wetness.
Levy	Poor: shrink-swell, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
15 Duckston	Poor: wetness.	Good	Unsuited: excess fines.	Poor: too sandy.
16 Escambia	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
17[1]:				
Escambia	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
17[1]:				
Urban land.				
18 Fripp	Good	Good	Unsuited: excess fines.	Poor: too sandy.
19 Grady	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
20 Harleston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
21[1]:				
Harleston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
22, 23, 24 Heidel	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
25[1]:				
Izagora	Poor: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey, thin layer.
Annemaine	Poor: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer.
26[1]:				
Izagora	Poor: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey, thin layer.
Bethera	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, thin layer.
27[1]:				
Johnston	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Pamlico	Poor: wetness, excess humus.	Poor: excess humus.	Unsuited: excess humus.	Poor: wetness.
28 Lafitte	Poor: low strength, wetness, excess humus.	Unsuited: excess humus.	Unsuited: excess humus.	Poor: wetness, excess humus.
29 Lucedale	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
30, 31 Malbis	Fair: low strength, wetness.	Poor: excess fines.	Unsuited: excess fines.	Fair: thin layer, too clayey.
32, 33, 34 Notcher	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, too clayey, small stones.
35 Osier	Poor: wetness.	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy, wetness.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
36: Pactolus	Fair: wetness.	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
37[1]:				
Pamlico	Poor: wetness, excess humus.	Poor: excess humus.	Unsuited: excess humus.	Poor: wetness.
Bibb	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
38[1]. Pits				
39: Poarch	Fair: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
40[1]. Psamments				
41: Robertsdale	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones.
42: Saucier	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
43: Shubuta	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, thin layer.
44[1]:				
Shubuta	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, thin layer.
Troup	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
45: Smithton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
46[1]:				
Smithton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Urban land.				
47[1]:				
Smithton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Benndale	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
48[1]:				
Suffolk	Poor: low strength.	Good	Unsuited: excess fines.	Good.
Smithton	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
49[1]:				
Susquehanna	Poor: shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
49[1]:				
Harleston	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
50, 51 Troup	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
52[1]:				
Troup	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Heidel	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
53[1], 54[1]:				
Troup	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Urban land.				
55[1]:				
Troup	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Benndale	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: slope.
56[1]:				
Troup	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Heidel	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
57[1]. Urban land				

[1] See map unit description for composition and behavior characteristics.

TABLE 11.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. Absence of an entry indicates that the soil was not evaluated]

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
2[1]:						
Alaga	Seepage	Piping, seepage.	Not needed	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.
Harleston	Seepage	Piping	Slope	Favorable	Favorable	Favorable.
3 Axis	Seepage	Wetness	Floods, excess salt.	Wetness, floods.	Not needed	Wetness.
4 Bama	Seepage	Favorable	Not needed	Favorable	Favorable	Favorable.
5, 6 Bama	Seepage	Favorable	Not needed	Slope	Favorable	Favorable.
7[1]:						
Bayou	Favorable	Wetness, piping.	Poor outlets, percs slowly.	Wetness	Not needed	Wetness.
Escambia	Seepage	Thin layer, wetness.	Percs slowly	Wetness	Wetness	Favorable.
8[1]. Beaches						
9 Benndale	Seepage	Piping, seepage.	Not needed	Favorable	Favorable	Favorable.
10, 11 Benndale	Seepage	Piping, seepage.	Not needed	Slope	Favorable	Favorable.
12[1]:						
Benndale	Seepage	Piping, seepage.	Not needed	Slope	Favorable	Favorable.
Urban land.						
13[1]:						
Dorovan	Seepage	Excess humus, wetness.	Floods, excess humus.	Wetness	Not needed	Wetness.
Bibb	Seepage	Piping, wetness.	Floods	Floods, wetness.	Not needed	Wetness.
14[1]:						
Dorovan	Seepage	Excess humus, wetness.	Floods, excess humus.	Wetness	Not needed	Wetness.
Levy	Favorable	Compressible, low strength, shrink-swell.	Floods, percs slowly, wetness.	Floods, percs slowly, wetness.	Not needed	Not needed.
15 Duckston	Seepage	Seepage	Wetness	Wetness	Not needed	Not needed.
16 Escambia	Seepage	Thin layer, wetness.	Percs slowly	Wetness	Wetness	Favorable.
17[1]:						
Escambia	Seepage	Thin layer, wetness.	Percs slowly	Wetness	Wetness	Favorable.
Urban land.						
18 Fripp	Seepage	Seepage, piping.	Not needed	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
19 Grady	Seepage	Favorable	Floods, wetness, poor outlets.	Wetness, percs slowly, floods.	Not needed	Not needed.
20 Harleston	Seepage	Piping	Wetness	Favorable	Favorable	Favorable.
21[1]:						
Harleston	Seepage	Piping	Wetness	Favorable	Favorable	Favorable.
Urban land.						
22, 23, 24 Heidel	Seepage	Piping, seepage.	Not needed	Slope, fast intake.	Favorable	Favorable.
25[1]:						
Izagora	Favorable	Thin layer, wetness.	Favorable	Wetness	Wetness	Favorable.
Annemaine	Slope	Wetness	Percs slowly, floods, slope.	Percs slowly, floods, wetness.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
26[1]:						
Izagora	Favorable	Thin layer, wetness.	Favorable	Wetness	Wetness	Favorable.
Bethera	Favorable	Wetness	Percs slowly, floods.	Percs slowly, wetness, floods.	Not needed	Wetness, percs slowly.
27[1]:						
Johnston	Seepage	Wetness	Floods	Wetness, floods.	Not needed	Wetness.
Pamlico	Seepage	Piping	Floods, poor outlets.	Wetness, floods.	Not needed	Not needed.
28 Lafitte	Seepage	Unstable fill, excess humus, low strength.	Cutbanks cave, floods.	Not needed	Not needed	Not needed.
29 Lucedale	Seepage	Compressible, piping.	Not needed	Favorable	Favorable	Favorable.
30, 31 Malbis	Seepage	Piping	Not needed	Slope	Favorable	Favorable.
32, 33, 34 Notcher	Seepage	Favorable	Slope	Slope	Favorable	Favorable.
35 Osier	Seepage	Seepage, unstable fill.	Floods, cutbanks cave.	Floods, seepage.	Not needed	Not needed.
36 Pactolus	Seepage	Seepage	Cutbanks cave	Wetness, fast intake.	Not needed	Not needed.
37[1]:						
Pamlico	Seepage	Piping	Floods, poor outlets.	Wetness, floods.	Not needed	Not needed.
Bibb	Seepage	Piping, wetness.	Floods	Floods, wetness.	Not needed	Wetness.
38[1]. Pits						
39 Poarch	Seepage	Piping	Not needed	Wetness, slope.	Wetness	Favorable.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
40[1]. Psamments						
41 Robertsdale	Favorable	Wetness	Percs slowly, poor outlets.	Wetness, percs slowly.	Not needed	Wetness, percs slowly.
42 Saucier	Favorable	Thin layer	Percs slowly	Percs slowly, slow intake.	Percs slowly	Percs slowly.
43 Shubuta	Favorable	Low strength, piping.	Not needed, slope.	Percs slowly, complex slope.	Erodes easily	Percs slowly, erodes easily.
44[1]: Shubuta	Favorable	Low strength, piping.	Not needed, slope.	Percs slowly, complex slope.	Slope, erodes easily.	Percs slowly, erodes easily.
Troup	Seepage	Piping	Not needed	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.
45 Smithton	Seepage	Unstable fill, piping.	Wetness	Wetness	Wetness	Wetness.
46[1]: Smithton	Seepage	Unstable fill, piping.	Wetness	Wetness	Wetness	Wetness.
Urban land.						
47[1]: Smithton	Seepage	Unstable fill, piping.	Wetness	Wetness	Wetness	Wetness.
Benndale	Seepage	Piping, seepage.	Not needed	Slope	Favorable	Favorable.
48[1]: Suffolk	Slope, seepage.	Piping, seepage.	Not needed	Slope, fast intake.	Slope, too sandy.	Slope.
Smithton	Seepage	Unstable fill, piping.	Wetness	Wetness	Wetness	Wetness.
49[1]: Susquehanna	Favorable	Hard to pack, shrink-swell.	Percs slowly, slope.	Percs slowly, slope.	Percs slowly	Percs slowly.
Harleston	Seepage	Piping	Slope	Favorable	Favorable	Favorable.
50, 51 Troup	Seepage	Piping	Not needed	Droughty, fast intake, slope.	Too sandy	Droughty.
52[1]: Troup	Seepage	Piping	Not needed	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.
Heidel	Seepage	Piping, seepage.	Not needed	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
53[1], 54[1]: Troup	Seepage	Piping	Not needed	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.
Urban land.						

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
55[1]:						
Troup	Seepage	Piping	Not needed	Droughty, fast intake, slope.	Too sandy, slope.	Droughty, slope.
Benndale	Seepage	Piping, seepage.	Not needed	Slope	Slope	Slope.
56[1]:						
Troup	Seepage	Piping	Not needed	Droughty, fast intake.	Too sandy	Droughty.
Heidel	Seepage	Piping, seepage.	Not needed	Slope, fast intake.	Favorable	Favorable.
57[1]. Urban land						

[1] See map unit description for composition and behavior characteristics.

TABLE 12.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
2[1]:				
Alaga	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
Harleston	Slight	Slight	Moderate: slope.	Slight.
3 Axis	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
4 Bama	Slight	Slight	Slight	Slight.
5 Bama	Slight	Slight	Moderate: slope.	Slight.
6 Bama	Slight	Slight	Severe: slope.	Slight.
7[1]:				
Bayou	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Escambia	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Slight.
8[1]. Beaches				
9 Benndale	Slight	Slight	Slight	Slight.
10 Benndale	Slight	Slight	Moderate: slope.	Slight.
11 Benndale	Slight	Slight	Severe: slope.	Slight.
12[1]:				
Benndale	Slight	Slight	Moderate: slope.	Slight.
Urban land.				
13[1]:				
Dorovan	Severe: floods, wetness.	Severe: wetness, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, excess humus.
Bibb	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.
14[1]:				
Dorovan	Severe: floods, wetness.	Severe: wetness, excess humus.	Severe: wetness, floods, excess humus.	Severe: wetness, excess humus.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
14[1]:				
Levy	Severe: floods, percs slowly, wetness.	Severe: floods, wetness.	Severe: floods, percs slowly, wetness.	Severe: floods, wetness.
15 Duckston	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
16 Escambia	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Slight.
17[1]:				
Escambia	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Slight.
Urban land.				
18 Fripp	Severe: too sandy, floods.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.
19 Grady	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
20 Harleston	Slight	Slight	Slight	Slight.
21[1]:				
Harleston	Slight	Slight	Slight	Slight.
Urban land.				
22 Heidel	Slight	Slight	Slight	Slight.
23 Heidel	Slight	Slight	Moderate: slope.	Slight.
24 Heidel	Slight	Slight	Severe: slope.	Slight.
25[1]:				
Izagora	Severe: floods.	Moderate: wetness.	Moderate: slope, wetness.	Slight.
Annemaine	Severe: floods.	Moderate: wetness, percs slowly.	Severe: slope.	Slight.
26[1]:				
Izagora	Severe: floods.	Moderate: wetness.	Moderate: wetness.	Slight.
Bethera	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
27[1]:				
Johnston	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
27[1]:				
Pamlico	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
28 Lafitte	Severe: floods, wetness, excess humus.	Severe: floods, wetness, excess humus.	Severe: floods, wetness, excess humus.	Severe: floods, wetness, excess humus.
29 Lucedale	Slight	Slight	Slight	Slight.
30 Malbis	Slight	Slight	Slight	Slight.
31 Malbis	Slight	Slight	Moderate: slope.	Slight.
32 Notcher	Slight	Slight	Moderate: small stones.	Slight.
33 Notcher	Slight	Slight	Moderate: slope, small stones.	Slight.
34 Notcher	Slight	Slight	Severe: slope.	Slight.
35 Osier	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
36 Pactolus	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: wetness, too sandy.	Moderate: too sandy.
37[1]:				
Pamlico	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.
Bibb	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.
38[1]. Pits				
39 Poarch	Slight	Slight	Slight	Slight.
40[1]. Psamments				
41 Robertsdale	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
42 Saucier	Slight	Slight	Slight	Slight.
43 Shubuta	Moderate: percs slowly.	Slight	Moderate: percs slowly, slope.	Slight.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
44[1]:				
Shubuta	Moderate: percs slowly.	Slight	Moderate: percs slowly, slope.	Slight.
Troup	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
45 Smithton	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
46[1]:				
Smithton	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
Urban land.				
47[1]:				
Smithton	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
Benndale	Slight	Slight	Moderate: slope.	Slight.
48[1]:				
Suffolk	Slight	Slight	Slight	Slight.
Smithton	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
49[1]:				
Susquehanna	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: percs slowly, wetness.	Moderate: wetness.
Harleston	Slight	Slight	Moderate: slope.	Slight.
50 Troup	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
51 Troup	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
52[1]:				
Troup	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.
Heidel	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
53[1]:				
Troup	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
Urban land.				
54[1]:				
Troup	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.
Urban land.				

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails
55[1]:				
Troup	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.
Benndale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
56[1]:				
Troup	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
Heidel	Slight	Slight	Moderate: slope.	Slight.
57[1]. Urban land				

[1] See map unit description for composition and behavior characteristics.

TABLE 13.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2[1]:										
Alaga	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Fair	Very poor.
Harleston	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
3 Axis	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
4 Bama	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
5 Bama	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
6 Bama	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7[1]:										
Bayou	Poor	Fair	Fair	Poor	Poor	Good	Fair	Fair	Poor	Fair.
Escambia	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8[1]. Beaches										
9, 10 Benndale	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
11 Benndale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
12[1]:										
Benndale	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
13[1]:										
Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
14[1]:										
Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Levy	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
15 Duckston	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor.
16 Escambia	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
17[1]:										
Escambia	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land.										

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
18. Fripp	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
19. Grady	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
20. Harleston	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
21[1]:										
Harleston	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Urban land.										
22, 23. Heidel	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
24. Heidel	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
25[1]:										
Izagora	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Annemaine	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
26[1]:										
Izagora	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Bethera	Very poor.	Very poor.	Poor	Fair	Fair	Good	Good	Very poor.	Poor	Good.
27[1]:										
Johnston	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Pamlico	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
28. Lafitte	Very poor.	Very poor.	Very poor.	---	---	Good	Very poor.	Very poor.	---	Good.
29. Lucedale	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
30. Malbis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
31. Malbis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
32. Notcher	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
33. Notcher	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
34. Notcher	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
35. Osier	Very poor.	Poor	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair.
36. Pactolus	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
37[1]:										
Pamlico	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Bibb	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
38[1]. Pits										
39 Poarch	Good	Good	Good'	Good	Good	Poor	Poor	Good	Good	Poor.
40[1]. Psamments										
41 Robertsdale	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
42 Saucier	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
43 Shubuta	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
44[1]:										
Shubuta	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Troup	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor.	Fair	Poor	Very poor.
45 Smithton	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
46[1]:										
Smithton	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Urban land.										
47[1]:										
Smithton	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Benndale	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
48[1]:										
Suffolk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Smithton	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
49[1]:										
Susquehanna	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Harleston	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
50, 51 Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
52[1]:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
52[1]:										
Heidel	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
53[1], 54[1]:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Urban land.										
55[1]:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Benndale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
56[1]:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Heidel	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
57[1]. Urban land										

1 See map unit description for composition and behavior characteristics.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2[1]: Alaga	0-5	Loamy sand	SM, SW-SM, SP-SM	A-2, A-3	0	100	100	40-70	10-35	---	NP
	5-80	Loamy sand, loamy fine sand, fine sand.	SM, SW-SM, SP-SM	A-2, A-3, A-1-B	0	100	100	50-80	10-35	---	NP
Harleston	0-10	Sandy loam	ML, SM, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-85	30-55	<25	NP-7
	10-46	Sandy loam, loam	SC, CL, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-95	30-70	20-30	5-10
	46-72	Sandy loam, loam, sandy clay loam.	SC, CL, CL-ML, SM-SC	A-2, A-4, A-6	0	90-100	85-100	60-95	30-70	20-35	5-13
3 Axis	0-7	Mucky sandy clay loam.	CL-ML, SC, SM-SC	A-4	0	100	100	70-85	40-60	<28	4-10
	7-40	Sandy loam, loam, silt loam.	CL-ML, SC, SM-SC, CL	A-4	0	100	100	75-95	45-75	<28	4-10
	40-71	Sandy loam, loam, sandy clay loam.	ML, CL-ML, SM, SM-SC	A-4	0	100	100	75-95	45-65	<25	NP-7
4, 5, 6 Bama	0-14	Sandy loam	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	85-100	70-95	30-70	<30	NP-10
	14-41	Loam, sandy clay loam.	SM, SC, SM-SC, CL-ML	A-4, A-6	0	90-100	85-100	80-95	36-70	<35	2-15
	41-74	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	85-100	80-100	80-95	40-70	20-40	8-18
7[1]: Bayou	0-43	Sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	100	70-95	30-65	<25	NP-7
	43-66	Sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	95-100	95-100	80-100	45-75	25-38	8-15
Escambia	0-8	Sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-90	40-65	<25	NP-7
	8-32	Sandy loam, loam, silt loam.	SC, SM-SC, CL, CL-ML	A-4, A-6	0	95-100	95-100	70-90	40-75	<30	5-15
	32-65	Sandy loam, loam, silt loam.	SC, CL	A-4, A-6	0	85-95	85-95	60-90	35-80	20-35	8-20
8[1]. Beaches											

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
9, 10, 11---------- Benndale	0-11	Sandy loam------	ML, SM, CL-ML, SM-SC	A-4, A-2-4	0	100	100	60-96	30-55	<25	NP-7
	11-72	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-4	0	100	100	70-95	40-75	<22	3-7
12[1]:											
Benndale----------	0-11	Sandy loam------	ML, SM, CL-ML, SM-SC	A-4, A-2-4	0	100	100	60-96	30-55	<25	NP-7
	11-72	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-4	0	100	100	70-95	40-75	<22	3-7
Urban land.											
13[1]:											
Dorovan-----------	0-80	Muck------------	PT	---	0	---	---	---	---	---	---
Bibb--------------	0-21	Sandy loam------	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	21-60	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
14[1]:											
Dorovan-----------	0-80	Muck------------	PT	---	0	---	---	---	---	---	---
Levy--------------	0-6	Silty clay loam	CL, CH, ML, MH	A-6, A-7	0	100	100	98-100	85-100	30-65	12-35
	6-45	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0	100	100	98-100	85-100	35-65	15-35
	45-75	Variable--------	---	---	---	---	---	---	---	---	---
15----------------- Duckston	0-66	Sand------------	SW, SP-SM	A-2, A-3	0	100	95-100	60-75	3-10	---	NP
16----------------- Escambia	0-8	Sandy loam------	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-90	40-65	<25	NP-7
	8-32	Sandy loam, loam, silt loam.	SC, SM-SC, CL, CL-ML	A-4, A-6	0	95-100	95-100	70-90	40-75	<30	5-15
	32-65	Sandy loam, loam, silt loam.	SC, CL	A-4, A-6	0	85-95	85-95	60-90	35-80	20-35	8-20
17[1]:											
Escambia----------	0-8	Sandy loam------	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-90	40-65	<25	NP-7
	8-32	Sandy loam, loam, silt loam.	SC, SM-SC, CL, CL-ML	A-4, A-6	0	95-100	95-100	70-90	40-75	<30	5-15
	32-65	Sandy loam, loam, silt loam.	SC, CL	A-4, A-6	0	85-95	85-95	60-90	35-80	20-35	8-20
Urban land.											

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
18----------------- Fripp	0-4	Sand------------	SP, SP-SM	A-3	0	100	98-100	85-99	0-5	---	NP
	4-99	Fine sand, sand	SP, SP-SM	A-3	0	100	98-100	85-99	0-5	---	NP
19----------------- Grady	0-6	Loam------------	SM, ML, CL-ML, SM-SC	A-4, A-6	0	100	99-100	85-100	40-75	<30	NP-15
	6-12	Clay loam, sandy clay loam, loam.	CL, CH	A-6	0	100	100	90-100	51-80	25-40	11-20
	12-66	Clay, sandy clay	CL, ML, CH	A-6, A-7	0	100	100	90-100	55-90	30-50	12-25
20----------------- Harleston	0-10	Sandy loam------	ML, SM, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-85	30-55	<25	NP-7
	10-46	Sandy loam, loam	SC, CL, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-95	30-70	20-30	5-10
	46-72	Sandy loam, loam, sandy clay loam.	SC, CL, CL-ML, SM-SC	A-2, A-4, A-6	0	90-100	85-100	60-95	30-70	20-35	5-13
21[1]:											
Harleston---------	0-10	Sandy loam------	ML, SM, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-85	30-55	<25	NP-7
	10-46	Sandy loam, loam	SC, CL, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-95	30-70	20-30	5-10
	46-72	Sandy loam, loam, sandy clay loam.	SC, CL, CL-ML, SM-SC	A-2, A-4, A-6	0	90-100	85-100	60-95	30-70	20-35	5-13
Urban land.											
22, 23, 24--------- Heidel	0-7	Sandy loam------	SM	A-4	0	90-100	85-100	70-85	36-45	<30	NP-4
	7-92	Fine sandy loam, sandy loam.	ML, CL-ML, SM, SM-SC	A-4	0	90-100	85-100	60-85	36-55	<25	4-7
25[1]:											
Izagora-----------	0-8	Sandy loam------	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-95	40-65	<25	NP-5
	8-54	Loam, clay loam, silty clay loam.	CL	A-4, A-6, A-7	0	95-100	95-100	85-100	60-95	25-45	8-25
	54-80	Clay loam, clay	CL, CH	A-6, A-7	0	95-100	95-100	90-100	70-95	35-60	20-40
Annemaine---------	0-11	Sandy loam------	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-95	40-75	<20	NP-5
	11-42	Clay, clay loam	CL	A-6, A-7	0	95-100	95-100	85-100	70-98	30-50	10-25
	42-54	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	0	95-100	95-100	80-100	36-80	20-35	8-15
	54-74	Sandy clay loam, fine sandy loam, sandy loam.	SM, SM-SC, SC	A-2, A-4	0	95-100	95-100	60-90	30-50	<20	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification Unified	Classification AASHTO	Frag-ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
26[1]:											
Izagora-----------	0-8	Sandy loam------	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-95	40-65	<25	NP-5
	8-54	Loam, clay loam, silty clay loam.	CL	A-4, A-6, A-7	0	95-100	95-100	85-100	60-95	25-45	8-25
	54-80	Clay loam, clay	CL, CH	A-6, A-7	0	95-100	95-100	90-100	70-95	35-60	20-40
Bethera-----------	0-12	Loam------------	CL	A-4, A-6	0	100	95-100	85-95	60-75	30-37	8-14
	12-80	Clay, clay loam, sandy clay.	CL, CH, ML	A-6, A-7	0	100	98-100	93-100	55-95	37-55	12-30
27[1]:											
Johnston----------	0-36	Mucky loam------	OL	A-8	0	100	100	90-100	60-75	---	NP
	36-72	Stratified fine sandy loam to sandy loam.	SM, SP-SM	A-2, A-3	0	100	100	50-85	25-50	<35	NP-10
Pamlico-----------	0-38	Muck------------	PT	---	0	---	---	---	---	---	---
	38-66	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	0	100	100	70-95	5-20	---	NP
28----------------- Lafitte	0-63	Muck------------	PT	A-8	0	---	---	---	---	---	---
	63-73	Clay, silty clay	MH, CH	A-7-5	0	100	100	85-95	80-95	60-105	30-65
29----------------- Lucedale	0-8	Sandy loam------	SM, ML	A-2, A-4	0	100	95-100	80-95	25-65	<30	NP-3
	8-80	Sandy clay loam, clay loam, loam.	CL-ML, SC, CL, SM-SC	A-4, A-6, A-2	0	95-100	95-100	80-100	30-75	25-40	4-15
30, 31------------- Malbis	0-7	Sandy loam------	SM, ML	A-4	0	100	97-100	92-97	40-62	<30	NP-5
	7-46	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4	0	99-100	95-99	91-97	55-62	26-31	5-9
	46-72	Sandy clay loam, clay loam.	ML	A-4, A-5, A-7	0	98-100	96-100	90-97	56-71	36-46	4-13
32, 33, 34--------- Notcher	0-7	Sandy loam------	SM	A-2, A-4	0	70-95	60-95	50-85	20-50	---	NP
	7-44	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	75-95	70-95	60-80	36-60	20-35	7-20
	44-76	Sandy clay loam, clay loam.	CH, CL, SC, SM	A-6, A-7	0	85-100	85-100	70-98	36-75	30-55	11-23
35----------------- Osier	0-6	Loamy sand------	SP-SM	A-2, A-3	0	100	98-100	60-85	5-12	---	NP
	6-43	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	95-100	65-90	5-20	---	NP
	43-66	Coarse sand, sand, fine sand.	SP, SP-SM	A-1, A-3	0	100	90-100	40-60	2-10	---	NP
36----------------- Pactolus	0-39	Loamy sand------	SM	A-2	0	100	90-100	51-95	13-30	---	NP
	39-70	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2, A-3	0	100	90-100	51-95	5-30	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
37[1]:											
Pamlico	0-38	Muck	PT	---	0	---	---	---	---	---	---
	38-66	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-2, A-3	0	100	100	70-95	5-20	---	NP
Bibb	0-21	Sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	0-5	95-100	90-100	60-90	30-60	<25	NP-7
	21-60	Sandy loam, loam, silt loam.	SM, SM-SC, ML, CL-ML	A-2, A-4	0-10	60-100	50-100	40-100	30-90	<30	NP-7
38[1]. Pits											
39 Poarch	0-11	Sandy loam	SM, SM-SC	A-4, A-2-4	0	95-100	95-100	70-95	30-50	<25	NP-5
	11-36	Loam, sandy loam, silt loam.	ML, CL-ML, CL	A-4	0	95-100	95-100	85-95	51-75	20-30	NP-10
	36-66	Loam, sandy loam, silt loam.	ML, CL, CL-ML	A-4	0	85-100	85-100	85-95	51-75	20-30	2-10
40[1]. Psamments											
41 Robertsdale	0-5	Loam	SM-SC, CL-ML, SM, ML	A-4	0	90-100	75-100	70-100	40-60	<25	NP-7
	5-18	Clay loam, sandy clay loam, loam.	CL-ML, CL, SC, SM-SC	A-4	0	80-100	70-100	65-95	40-60	20-30	4-10
	18-60	Sandy clay loam, clay loam, loam.	SC, CL, CL-ML, SM-SC	A-4, A-6	0	90-100	80-100	70-95	40-60	25-35	4-12
42 Saucier	0-10	Sandy loam	SM, ML	A-4	0	100	95-100	70-80	40-55	<20	NP-3
	10-30	Loam, clay loam	CL	A-6, A-4	0	95-100	85-95	85-95	60-75	25-38	8-15
	30-72	Sandy clay loam, clay loam.	CL, SM-SC	A-7, A-6	0	100	90-100	90-100	82-95	35-48	18-25
43 Shubuta	0-6	Sandy loam	SM, ML, CL-ML, CL	A-2, A-4	0	95-100	95-100	70-95	30-75	<30	NP-10
	6-44	Clay, sandy clay, clay loam.	CH, MH, CL, SC	A-7	0	95-100	95-100	95-100	45-90	41-70	18-40
	44-82	Clay, sandy clay, sandy clay loam.	CH, MH, CL, SC	A-6, A-7	0	95-100	95-100	80-100	40-80	35-60	15-40
44[1]:											
Shubuta	0-6	Sandy loam	SM, ML, CL-ML, CL	A-2, A-4	0	95-100	95-100	70-95	30-75	<30	NP-10
	6-44	Clay, sandy clay, clay loam.	CH, MH, CL, SC	A-7	0	95-100	95-100	95-100	45-90	41-70	18-40
	44-82	Clay, sandy clay, sandy clay loam.	CH, MH, CL, SC	A-6, A-7	0	95-100	95-100	80-100	40-80	35-60	15-40

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
44[1]:											
Troup-------------	0-69	Loamy sand------	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	69-86	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
45---------------- Smithton	0-17	Sandy loam------	ML, SM	A-2, A-4	0	95-100	95-100	60-95	30-65	---	NP
	17-72	Sandy loam, loam.	ML, CL-ML	A-4	0	95-100	95-100	85-95	55-80	<25	2-7
46[1]:											
Smithton----------	0-17	Sandy loam------	ML, SM	A-2, A-4	0	95-100	95-100	60-95	30-65	---	NP
	17-72	Sandy loam, loam.	ML, CL-ML	A-4	0	95-100	95-100	85-95	55-80	<25	2-7
Urban land.											
47[1]:											
Smithton----------	0-17	Sandy loam------	ML, SM	A-2, A-4	0	95-100	95-100	60-95	30-65	---	NP
	17-72	Sandy loam, loam.	ML, CL-ML	A-4	0	95-100	95-100	85-95	55-80	<25	2-7
Benndale----------	0-11	Sandy loam------	ML, SM, CL-ML, SM-SC	A-4, A-2-4	0	100	100	60-96	30-55	<25	NP-7
	11-72	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-4	0	100	100	70-95	40-75	<22	3-7
48[1]:											
Suffolk-----------	0-11	Sandy loam------	SM, SM-SC	A-2, A-4	0	90-100	75-100	50-80	25-50	<25	NP-7
	11-48	Sandy clay loam, clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	90-100	75-100	50-95	25-75	20-40	5-20
	48-66	Loamy fine sand, fine sandy loam, gravelly sand.	SP, SM, SM-SC	A-1, A-2, A-4	0	75-100	60-100	30-80	3-50	<25	NP-7
Smithton----------	0-17	Sandy loam------	ML, SM	A-2, A-4	0	95-100	95-100	60-95	30-65	---	NP
	17-72	Sandy loam, loam	ML, CL-ML	A-4	0	95-100	95-100	85-95	55-80	<25	2-7
49[1]:											
Susquehanna-------	0-9	Loam------------	ML, CL	A-4, A-6	0	100	100	85-100	70-95	20-35	5-15
	9-66	Clay, silty clay loam, silty clay.	CH, MH	A-7	0	100	100	88-100	80-98	50-90	28-56
Harleston---------	0-10	Sandy loam------	ML, SM, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-85	30-55	<25	NP-7
	10-46	Sandy loam, loam	SC, CL, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	60-95	30-70	20-30	5-10
	46-72	Sandy loam, loam, sandy clay loam.	SC, CL, CL-ML, SM-SC	A-2, A-4, A-6	0	90-100	85-100	60-95	30-70	20-35	5-13
50, 51------------ Troup	0-69	Loamy sand------	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	69-86	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
52[1]:											
Troup-------------	0-69	Loamy sand------	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	69-86	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Heidel------------	0-7	Sandy loam------	SM	A-4	0	90-100	85-100	70-85	36-45	<30	NP-4
	7-92	Fine sandy loam, sandy loam.	ML, CL-ML, SM, SM-SC	A-4	0	90-100	85-100	60-85	36-55	<25	4-7
53[1], 54[1]:											
Troup-------------	0-69	Loamy sand------	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	69-86	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Urban land.											
55[1]:											
Troup-------------	0-69	Loamy sand------	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	69-86	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Benndale----------	0-11	Sandy loam------	ML, SM, CL-ML, SM-SC	A-4, A-2-4	0	100	100	60-96	30-55	<25	NP-7
	11-72	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-4	0	100	100	70-95	40-75	<22	3-7
56[1]:											
Troup-------------	0-69	Loamy sand------	SM, SP-SM	A-2	0	100	100	50-75	10-30	---	NP
	69-86	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Heidel------------	0-7	Sandy loam------	SM	A-4	0	90-100	85-100	70-85	36-45	<30	NP-4
	7-92	Fine sandy loam, sandy loam.	ML, CL-ML, SM, SM-SC	A-4	0	90-100	85-100	60-85	36-55	<25	4-7
57[1]. Urban land											

[1] See map unit description for composition and behavior characteristics.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	Pct	In/hr	In/in	pH			
2[1]:								
Alaga	0-5	2-12	>6.0	0.05-0.09	4.5-6.0	Low	0.17	5
	5-80	2-12	>6.0	0.05-0.09	4.5-6.0	Low	0.17	
Harleston	0-10	5-15	0.6-6.0	0.08-0.16	3.6-5.5	Low	0.20	5
	10-46	8-18	0.6-2.0	0.13-0.16	4.5-5.5	Low	0.32	
	46-72	15-32	0.6-2.0	0.13-0.16	4.5-5.5	Low	0.32	
3 Axis	0-7	15-25	0.6-2.0	0.08-0.15	6.1-8.4	Low	0.10	5
	7-40	8-15	0.6-2.0	0.08-0.15	6.1-8.4	Low	0.10	
	40-71	8-25	0.6-2.0	0.08-0.15	6.1-8.4	Low	0.10	
4, 5, 6 Bama	0-14	7-22	0.6-6.0	0.08-0.15	4.5-6.0	Low	0.24	5
	14-41	18-32	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.32	
	41-74	20-35	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.32	
7[1]:								
Bayou	0-43	5-18	0.6-2.0	0.11-0.17	4.5-5.5	Low	0.20	5
	43-66	20-30	0.2-0.6	0.12-0.20	3.6-6.0	Low	0.32	
Escambia	0-8	5-15	2.0-6.0	0.11-0.15	5.1-5.5	Low	0.24	4
	8-32	8-18	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.24	
	32-65	15-32	0.06-0.6	0.12-0.18	4.5-5.5	Low	0.28	
8[1]. Beaches								
9, 10, 11 Benndale	0-11	6-14	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.20	5
	11-72	10-18	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.28	
12[1]:								
Benndale	0-11	6-14	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.20	5
	11-72	10-18	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.28	
Urban land.								
13[1]:								
Dorovan	0-80	---	0.6-2.0	0.25-0.50	4.5-5.5	-------	0.10	5
Bibb	0-21	4-12	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.20	5
	21-60	8-18	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.37	
14[1]:								
Dorovan	0-80	---	0.6-2.0	0.25-0.50	4.5-5.5	-------	0.10	5
Levy	0-6	15-35	0.06-0.2	0.16-0.22	3.6-5.5	High	0.32	5
	6-45	40-55	0.06-0.2	0.16-0.22	3.6-5.5	High	0.32	
	45-75	30-50	---	---	---	-------	----	
15 Duckston	0-66	1-5	>20	0.02-0.05	5.6-7.8	Low	0.10	5
16 Escambia	0-8	5-15	2.0-6.0	0.11-0.15	5.1-5.5	Low	0.24	4
	8-32	8-18	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.24	
	32-65	15-32	0.06-0.6	0.12-0.18	4.5-5.5	Low	0.28	
17[1]:								
Escambia	0-8	5-15	2.0-6.0	0.11-0.15	5.1-5.5	Low	0.24	4
	8-32	8-18	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.24	
	32-65	15-32	0.06-0.6	0.12-0.18	4.5-5.5	Low	0.28	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
							K	T
	In	Pct	In/hr	In/in	pH			
17[1]:								
Urban land.								
18	0-4	1-5	6.0-20	0.02-0.08	5.1-7.8	Low	0.10	5
Fripp	4-99	1-5	6.0-20	0.02-0.06	5.6-7.8	Low	0.10	
19	0-6	8-18	0.6-2.0	0.10-0.18	3.6-5.5	Low	0.10	5
Grady	6-12	10-25	0.2-0.6	0.10-0.15	3.6-5.5	Low	0.10	
	12-66	35-55	0.06-0.2	0.12-0.16	3.6-5.5	Moderate	0.10	
20	0-10	5-15	0.6-6.0	0.08-0.16	3.6-5.5	Low	0.20	5
Harleston	10-46	8-18	0.6-2.0	0.13-0.16	4.5-5.5	Low	0.32	
	46-72	15-32	0.6-2.0	0.13-0.16	4.5-5.5	Low	0.32	
21[1]:								
Harleston	0-10	5-15	0.6-6.0	0.08-0.16	3.6-5.5	Low	0.20	5
	10-46	8-18	0.6-2.0	0.13-0.16	4.5-5.5	Low	0.32	
	46-72	15-32	0.6-2.0	0.13-0.16	4.5-5.5	Low	0.32	
Urban land.								
22, 23, 24	0-7	5-10	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.20	5
Heidel	7-92	12-35	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.20	
25[1]:								
Izagora	0-8	8-20	2.0-6.0	0.11-0.20	3.6-6.0	Low	0.28	4
	8-54	18-30	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.32	
	54-80	35-55	0.06-0.2	0.16-0.20	4.5-5.5	Moderate	0.32	
Annemaine	0-17	10-20	0.6-2.0	0.12-0.16	4.5-6.5	Low	0.43	4
	11-42	35-50	0.06-0.2	0.14-0.18	4.5-5.5	Moderate	0.37	
	42-54	20-35	0.2-0.6	0.14-0.18	4.5-5.5	Low	0.37	
	54-74	5-25	0.2-2.0	0.14-0.18	4.5-5.5	Low	0.32	
26[1]:								
Izagora	0-8	8-20	2.0-6.0	0.11-0.20	3.6-6.0	Low	0.28	4
	8-54	18-30	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.32	
	54-80	35-55	0.06-0.2	0.16-0.20	4.5-5.5	Moderate	0.32	
Bethera	0-12	8-20	0.6-2.0	0.11-0.16	3.6-6.0	Low	0.28	5
	12-80	35-50	0.06-0.6	0.14-0.18	3.6-6.0	Moderate	0.32	
27[1]:								
Johnston	0-36	10-25	2.0-6.0	0.20-0.26	4.5-5.5	Low	0.17	5
	36-72	5-22	6.0-20	0.06-0.12	4.5-5.5	Low	0.17	
Pamlico	0-38	1-5	0.6-2.0	0.24-0.26	3.6-4.4	-------------	0.10	5
	38-66	1-8	6.0-20	0.03-0.06	3.6-5.5	Low	0.17	
28	0-63	1-5	>2.0	>.20	6.1-8.4	Low	----	5
Lafitte	63-73	40-55	<0.06	0.10-0.15	6.1-8.4	High	0.32	
29	0-8	10-18	0.6-2.0	0.15-0.20	5.1-6.5	Low	0.24	5
Lucedale	8-80	19-35	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.24	
30, 31	0-7	10-25	0.6-2.0	0.10-0.15	5.1-6.0	Low	0.28	5
Malbis	7-46	22-35	0.6-2.0	0.12-0.20	4.5-5.5	Low	0.28	
	46-72	20-35	0.2-0.6	0.12-0.17	4.5-5.5	Low	0.28	
32, 33, 34	0-7	8-15	0.6-2.0	0.11-0.18	5.1-7.3	Low	0.28	4
Notcher	7-44	20-30	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.28	
	44-76	30-40	0.2-0.6	0.12-0.16	4.5-5.5	Low	0.28	
35	0-6	3-8	6.0-20	0.03-0.10	4.5-6.0	Low	0.17	5
Osier	6-43	3-8	6.0-20	0.03-0.10	4.5-6.0	Low	0.17	
	43-66	1-5	>20	0.02-0.05	4.5-6.0	Low	0.17	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
							K	T
	In	Pct	In/hr	In/in	pH			
36---------------Pactolus	0-39	4-8	6.0-20.	0.05-0.10	4.5-6.0	Low----------	0.10	5
	39-70	1-5	6.0-20.	0.03-0.07	4.5-5.5	Low----------	0.10	
37[1]:								
Pamlico----------	0-38	1-5	0.6-2.0	0.24-0.26	3.6-4.4	-------------	0.10	5
	38-66	1-8	6.0-20	0.03-0.06	3.6-5.5	Low----------	0.17	
Bibb------------	0-21	4-12	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.20	5
	21-60	8-18	0.6-2.0	0.12-0.20	4.5-5.5	Low----------	0.37	
38[1]. Pits								
39---------------Poarch	0-11	8-15	2.0-6.0	0.10-0.15	4.5-5.5	Low----------	0.20	5
	11-36	8-18	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.24	
	36-66	15-35	0.2-2.0	0.10-0.20	4.5-5.5	Low----------	0.24	
40[1]. Psamments								
41---------------Robertsdale	0-5	8-18	0.6-2.0	0.10-0.15	4.5-6.0	Low----------	0.24	3
	5-18	12-25	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28	
	18-60	20-35	0.06-0.2	0.12-0.16	4.5-5.5	Low----------	0.28	
42---------------Saucier	0-10	5-18	2.0-6.0	0.12-0.15	4.5-5.5	Low----------	0.24	4
	10-30	20-30	0.6-2.0	0.16-0.19	4.5-5.5	Low----------	0.32	
	30-72	20-38	0.06-0.2	0.16-0.20	4.5-5.5	Moderate-----	0.32	
43---------------Shubuta	0-6	5-12	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.37	5
	6-44	35-45	0.2-0.6	0.14-0.18	4.5-5.5	Moderate-----	0.28	
	44-82	35-50	0.2-0.6	0.14-0.18	4.5-5.5	Moderate-----	0.28	
44[1]:								
Shubuta----------	0-6	5-12	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.37	5
	6-44	35-45	0.2-0.6	0.14-0.18	4.5-5.5	Moderate-----	0.28	
	44-82	35-50	0.2-0.6	0.14-0.18	4.5-5.5	Moderate-----	0.28	
Troup------------	0-69	3-8	6.0-20	0.03-0.10	4.5-5.5	Very low-----	0.20	5
	69-86	10-35	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
45---------------Smithton	0-17	5-8	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.32	5
	17-72	6-22	0.2-0.6	0.11-0.20	4.5-5.5	Low----------	0.32	
46[1]:								
Smithton---------	0-17	5-8	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.32	5
	17-72	6-22	0.2-0.6	0.11-0.20	4.5-5.5	Low----------	0.32	
Urban land.								
47[1]:								
Smithton---------	0-17	5-8	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.32	5
	17-72	6-22	0.2-0.6	0.11-0.20	4.5-5.5	Low----------	0.32	
Benndale---------	0-11	6-14	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20	5
	11-72	10-18	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.28	
48[1]:								
Suffolk----------	0-11	6-10	2.0-6.0	0.12-0.15	5.1-7.3	Low----------	0.28	4
	11-48	10-33	0.6-2.0	0.12-0.20	4.5-5.5	Low----------	0.28	
	48-66	4-10	>2.0	0.04-0.10	4.5-5.5	Low----------	0.17	
Smithton---------	0-17	5-8	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.32	5
	17-72	6-22	0.2-0.6	0.11-0.20	4.5-5.5	Low----------	0.32	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
							K	T
	In	Pct	In/hr	In/in	pH			
49[1]:								
Susquehanna-----	0-9	10-20	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.43	3
	9-66	35-50	<0.06	0.15-0.20	4.5-5.5	High---------	0.32	
Harleston-------	0-10	5-15	0.6-6.0	0.08-0.16	3.6-5.5	Low----------	0.20	5
	10-46	8-18	0.6-2.0	0.13-0.16	4.5-5.5	Low----------	0.32	
	46-72	15-32	0.6-2.0	0.13-0.16	4.5-5.5	Low----------	0.32	
50, 51----------- Troup	0-69	3-8	6.0-20	0.03-0.10	4.5-5.5	Very low-----	0.20	5
	69-86	10-35	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
52[1]:								
Troup-----------	0-69	3-8	6.0-20	0.03-0.10	4.5-5.5	Very low-----	0.20	5
	69-86	10-35	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
Heidel----------	0-7	5-10	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20	5
	7-92	12-35	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20	
53[1], 54[1]:								
Troup-----------	0-69	3-8	6.0-20	0.03-0.10	4.5-5.5	Very low-----	0.20	5
	69-86	10-35	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
Urban land.								
55[1]:								
Troup-----------	0-69	3-8	6.0-20	0.03-0.10	4.5-5.5	Very low-----	0.20	5
	69-86	10-35	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
Benndale--------	0-11	6-14	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20	5
	11-72	10-18	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.28	
56[1]:								
Troup-----------	0-69	3-8	6.0-20	0.03-0.10	4.5-5.5	Very low-----	0.20	5
	69-86	10-35	0.6-2.0	0.10-0.13	4.5-5.5	Low----------	0.20	
Heidel----------	0-7	5-10	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20	5
	7-92	12-35	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.20	
57[1]. Urban land								

[1] See map unit description for composition and behavior characteristics.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." Absence of an entry indicates that the feature is not a concern]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
2[1]:									
Alaga	A	None	---	---	>6.0	---	---	Low	Moderate.
Harleston	C	None	---	---	2.0-3.0	Apparent	Nov-Mar	Moderate	High.
3 Axis	D	Frequent	Very brief	Jan-Dec	+1.-1.0	Apparent	Jan-Dec	High	High.
4, 5, 6 Bama	B	None	---	---	>6.0	---	---	Low	Moderate.
7[1]:									
Bayou	D	None	---	---	0-1.0	Perched	Dec-May	High	High.
Escambia	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
8[1]. Beaches									
9, 10, 11 Benndale	B	None	---	---	>6.0	---	---	Low	Moderate.
12[1]:									
Benndale	B	None	---	---	>6.0	---	---	Low	Moderate.
Urban land.									
13[1]:									
Dorovan	D	Frequent	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	High	High.
Bibb	C	Frequent	Brief	Dec-May	0.5-1.5	Apparent	Dec-Apr	High	Moderate.
14[1]:									
Dorovan	D	Frequent	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	High	High.
Levy	D	Frequent	Very long	Jan-Dec	+2-0.5	Apparent	Jan-Dec	High	High.
15 Duckston	D	Frequent	Long to very long.	Jan-Dec	1.0-2.0	Apparent	Jan-Dec	Low	Low.
16 Escambia	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
17[1]:									
Escambia	C	None	---	---	1.5-2.5	Apparent	Dec-Mar	Moderate	High.
Urban land.									
18 Fripp	A	Rare	---	---	>6.0	---	---	Low	Low.
19 Grady	D	Frequent	Very long	Dec-Jun	+2-1.0	Apparent	Dec-Jun	High	High.
20 Harleston	C	None to rare	---	---	2.0-3.0	Apparent	Nov-Mar	Moderate	High.
21[1]:									
Harleston	C	None to rare	---	---	2.0-3.0	Apparent	Nov-Mar	Moderate	High.
Urban land.									

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
22, 23, 24: Heidel	B	None	---	---	>6.0	---	---	Low	High.
25[1]:									
Izagora	C	Rare	Very brief to brief.	Jan-Mar	2.0-3.0	Apparent	Dec-Mar	Moderate	High.
Annemaine	C	Rare	Very brief to brief.	Jan-Mar	1.5-2.5	Apparent	Jan-Mar	High	High.
26[1]:									
Izagora	C	Rare	Very brief to brief.	Jan-Mar	2.0-3.0	Apparent	Dec-Mar	Moderate	High.
Bethera	D	Occasional	Brief	Dec-Mar	0-1.5	Apparent	Dec-Apr	High	High.
27[1]:									
Johnston	D	Frequent	Long	Nov-Jul	+1-1.5	Apparent	Nov-Jun	High	High.
Pamlico	D	Frequent	Very long	Nov-Jun	+1-1.0	Apparent	Nov-Jul	High	High.
28: Lafitte	D	Frequent	Brief to long.	Jan-Dec	+1-0.5	Apparent	Jan-Dec	High	Moderate.
29: Lucedale	B	None	---	---	>6.0	---	---	Moderate	Moderate.
30, 31: Malbis	B	None	---	---	2.5-4.0	Perched	Dec-Mar	Moderate	Moderate.
32, 33, 34: Notcher	B	None	---	---	3.0-4.0	Apparent	Dec-Apr	Moderate	High.
35: Osier	D	Occasional	Brief	Dec-Apr	0.0-1.0	Apparent	Nov-Mar	High	High.
36: Pactolus	C	Rare	Very brief	Jan-Mar	1.5-2.5	Apparent	Jan-Mar	Low	High.
37[1]:									
Pamlico	D	Frequent	Very long	Nov-Jun	+1-1.0	Apparent	Nov-Jul	High	High.
Bibb	C	Frequent	Brief	Dec-May	0.5-1.5	Apparent	Dec-Apr	High	Moderate.
38[1]. Pits									
39: Poarch	B	None	---	---	2.5-5.0	Apparent	Dec-Mar	Low	High.
40[1]. Psamments									
41: Robertsdale	C	None	---	---	1.0-2.5	Perched	Dec-May	High	Moderate.
42: Saucier	C	None	---	---	2.5-4.0	Perched	Jan-Mar	Moderate	High.
43: Shubuta	C	None	---	---	>6.0	---	---	High	High.
44[1]:									
Shubuta	C	None	---	---	>6.0	---	---	High	High.
Troup	A	None	---	---	>6.0	---	---	Low	Moderate.
45: Smithton	D	Occasional	Brief	Dec-May	0-1.0	Perched	Dec-May	High	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft				
46[1]:									
Smithton	D	Occasional	Brief	Dec-May	0-1.0	Perched	Dec-May	High	High.
Urban land.									
47[1]:									
Smithton	D	Occasional	Brief	Dec-May	0-1.0	Perched	Dec-May	High	High.
Benndale	B	None	---	---	>6.0	---	---	Low	Moderate.
48[1]:									
Suffolk	B	None	---	---	>6.0	---	---	Moderate	High.
Smithton	D	Occasional	Brief	Dec-May	0-1.0	Perched	Dec-May	High	High.
49[1]:									
Susquehanna	D	None	---	---	>6.0	---	---	High	High.
Harleston	C	None	Very brief	Nov-Apr	2.0-3.0	Apparent	Nov-Mar	Moderate	High.
50, 51 Troup	A	None	---	---	>6.0	---	---	Low	Moderate.
52[1]:									
Troup	A	None	---	---	>6.0	---	---	Low	Moderate.
Heidel	B	None	---	---	>6.0	---	---	Low	High.
53[1], 54[1]:									
Troup	A	None	---	---	>6.0	---	---	Low	Moderate.
Urban land.									
55[1]:									
Troup	A	None	---	---	>6.0	---	---	Low	Moderate.
Benndale	B	None	---	---	>6.0	---	---	Low	Moderate.
56[1]:									
Troup	A	None	---	---	>6.0	---	---	Low	Moderate.
Heidel	B	None	---	---	>6.0	---	---	Low	High.
57[1]. Urban land									

[1] See map unit description for composition and behavior characteristics.

TABLE 17.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS

Soil and sample number	Depth	Horizon	Particle-size distribution: Sand (mm 2.0-0.05)	Silt (mm .05-.002)	Clay (mm <0.002)	Extractable bases: Ca	Mg	K	Extractable acidity	Base saturation	Reaction (1:1 soil-water)	Cation-exchange capacity
	In					Meq/100 g soil				Pct	pH	Meq/100 g soil
Axis:												
S76AL-049-004-1--	0-7	A1	59.6	18.8	21.6	8.47	22.94	0.97	9.76	76.84	4.9	42.14
S76AL-049-004-2--	7-12	C1g	62.5	25.8	11.7	5.45	17.26	0.78	4.80	83.04	5.6	28.30
S76AL-049-004-3--	12-20	C2g	68.8	23.7	7.5	1.86	7.46	0.53	4.48	68.77	4.3	14.34
S76AL-049-004-4--	20-40	C3g	67.1	20.5	12.4	1.10	3.56	0.16	3.36	59.01	3.5	8.19
S76AL-049-004-5--	40-51	C4g	68.7	19.9	11.4	0.88	2.13	0.17	3.44	48.12	3.7	6.63
S76AL-049-004-6--	51-57	C5g	74.5	17.6	7.9	0.47	1.09	0.03	1.84	46.73	3.9	3.45
S76AL-049-004-7--	57-71	C6g	67.6	14.8	17.6	0.65	2.16	0.22	2.16	58.42	4.5	5.19
Bama:												
S72AL-049-008-1--	0-5	A1	65.2	26.6	8.2	1.14	0.39	0.20	3.76	31.60	5.3	5.50
S72AL-049-008-3--	9-14	B1	57.7	25.9	16.4	0.44	0.16	0.06	3.04	17.80	5.0	3.70
S72AL-049-008-4--	14-22	B21t	55.3	23.2	21.4	0.44	0.23	0.04	3.84	15.60	4.8	4.55
S72AL-049-008-5--	22-41	B22t	55.2	22.3	22.5	0.37	0.16	0.03	3.68	13.10	5.1	4.23
S72AL-049-008-6--	41-68	B23t	54.9	16.9	28.2	0.08	0.10	0.01	3.92	4.60	5.2	4.11
Bayou:												
S76AL-049-006-1--	0-5	A11	70.0	24.2	5.8	0.16	0.08	0.04	4.16	6.61	4.3	4.45
S76AL-049-006-2--	5-9	A12	69.3	25.1	5.6	0.14	0.06	0.03	4.16	5.67	4.2	4.41
S76AL-049-006-3--	9-18	A2g	68.7	25.0	6.3	0.10	0.03	0.01	1.92	7.14	4.4	2.06
S76AL-049-006-4--	18-26	B1g	67.8	24.7	7.5	0.08	0.05	0.01	2.40	6.22	4.5	2.55
S76AL-049-006-5--	26-43	B21tg	64.2	23.2	12.6	0.06	0.04	0.02	3.92	3.33	4.5	4.05
S76AL-049-006-6--	43-60	B22tg	65.6	13.6	20.8	0.08	0.07	0.03	6.00	3.23	4.3	6.20
S76AL-049-006-7--	60-66	B23tg	67.6	11.8	20.6	0.10	0.08	0.03	6.00	3.58	4.3	6.22
Benndale:[1]												
S72AL-049-007-1--	0-5	A1	53.5	40.7	5.8	1.35	0.19	0.07	5.68	22.10	5.0	7.29
S72AL-049-007-2--	5-11	A2	52.7	41.1	6.2	0.44	0.11	0.02	2.16	21.20	5.3	2.74
S72AL-049-007-3--	11-16	B1	44.9	44.0	11.1	0.79	0.39	0.03	2.24	35.10	5.4	3.45
S72AL-049-007-4--	16-40	B21t	46.0	36.0	18.0	0.37	0.39	0.03	4.40	15.20	5.0	5.19
S72AL-049-007-5--	40-52	B22t	40.2	30.8	29.0	0.18	0.23	0.02	6.08	6.60	5.2	6.51
S72AL-049-007-6--	52-72	B23t	33.1	33.6	33.3	0.15	0.20	0.03	6.64	5.40	5.1	7.02
Lucedale:												
S73AL-049-001-1--	0-8	Ap	48.1	39.5	12.4	1.41	0.79	0.17	4.64	33.80	5.3	7.01
S73AL-049-001-2--	8-14	B21t	42.7	35.2	22.1	0.83	0.47	0.12	4.32	24.70	5.0	5.74
S73AL-049-001-3--	14-35	B22t	41.9	23.9	34.2	0.92	0.61	0.07	4.64	25.60	4.9	6.24
S73AL-049-001-4--	35-75	B23t	47.0	17.6	34.3	0.44	0.45	0.07	4.48	17.60	5.0	5.44
S73AL-049-001-5--	75-92	B24t	53.3	15.1	31.6	0.36	0.23	0.04	4.08	13.40	5.1	4.71
Lucedale:												
S73AL-049-003-1--	0-8	Ap	63.1	24.1	12.8	1.64	1.23	0.19	2.96	50.80	6.1	6.02
S73AL-049-003-2--	8-16	B21t	52.8	23.0	19.2	0.54	0.44	0.07	3.60	22.60	5.1	4.65
S73AL-049-003-3--	16-50	B22t	51.9	20.1	28.0	0.76	0.21	0.06	3.92	20.90	4.9	4.95
S73AL-049-003-4--	50-80	B23t	57.8	17.5	24.7	0.32	0.12	0.03	3.36	12.20	4.8	3.83
Lucedale:												
S73AL-049-010-1--	0-5	Ap	57.6	25.8	16.6	1.97	0.75	0.30	5.36	36.10	5.6	8.39
S73AL-049-010-2--	5-10	B1	62.0	20.7	17.3	0.64	0.33	0.09	3.76	22.00	5.4	4.82
S73AL-049-010-3--	10-40	B21t	54.9	18.7	26.4	0.39	0.34	0.11	3.44	19.60	5.4	4.28
S73AL-049-010-4--	40-82	B22t	61.5	8.5	30.0	0.08	0.10	0.01	2.72	6.50	5.2	2.91

See footnotes at end of table.

TABLE 17.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil and sample number	Depth	Horizon	Particle-size distribution: Sand (mm 2.0-0.05)	Particle-size distribution: Silt (mm .05-.002)	Particle-size distribution: Clay (mm <0.002)	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: K	Extractable acidity	Base saturation	Reaction (1:1 soil-water)	Cation-exchange capacity
	In					Meq/100 g soil	Meq/100 g soil	Meq/100 g soil	Meq/100 g soil	Pct	pH	Meq/100 g soil
Notcher:												
S72AL-049-009-1--	0-7	Ap	51.6	38.0	10.4	2.20	0.76	0.30	2.72	54.50	5.8	5.98
S72AL-049-009-2--	7-16	B21tcn	47.4	28.1	24.5	0.79	0.41	0.06	3.92	24.30	5.0	5.18
S72AL-049-009-3--	16-28	B22tcn	44.6	32.2	23.2	1.03	0.34	0.03	3.36	29.30	5.3	4.75
S72AL-049-009-4--	28-44	B23tcn	42.9	30.3	26.8	1.18	0.24	0.03	3.76	27.70	5.3	5.20
S72AL-049-009-5--	44-57	B24tcn	43.8	25.2	31.0	0.89	0.21	0.02	4.48	20.00	5.1	5.60
S72AL-049-009-6--	57-70	B25tcn	33.6	29.7	36.7	0.47	0.16	0.02	5.68	10.30	5.1	6.33
Pactolus:												
S73AL-049-005-1--	0-3	A1	75.6	18.1	6.3	0.28	0.07	0.04	4.00	8.70	4.9	4.38
S73AL-049-005-2--	3-10	C1	75.4	18.0	6.6	0.10	0.00	0.02	2.72	4.10	4.9	2.84
S73AL-049-005-3--	10-15	C2	79.1	13.9	7.0	0.10	0.02	0.02	2.00	6.20	4.7	2.13
S73AL-049-005-4--	15-39	C3	79.9	13.3	6.8	0.10	0.04	0.02	1.76	8.30	5.0	1.92
S73AL-049-005-5--	39-51	C4	89.4	6.7	3.9	0.05	0.02	0.02	0.56	13.80	5.3	0.65
S73AL-049-005-6--	51-70	C5	92.7	6.0	1.8	0.05	0.01	0.01	0.16	30.00	5.5	0.23
Saucier:												
S72AL-049-002-1--	0-5	A1	52.9	32.4	14.7	0.39	0.26	0.08	5.44	11.90	5.0	6.18
S72AL-049-002-2--	5-10	B1cn	47.2	35.6	17.2	0.23	0.07	0.04	4.00	8.00	5.0	4.35
S72AL-049-002-3--	10-24	B21tcn	42.6	36.3	21.1	0.23	0.09	0.02	4.40	7.20	5.1	4.74
S72AL-049-002-4--	24-30	B22tcn	46.7	32.6	20.7	0.21	0.11	0.01	4.48	6.90	5.1	4.81
S72AL-049-002-5--	30-42	B23tcn	53.2	25.5	21.3	0.13	0.10	0.02	4.08	5.70	5.1	4.33
S72AL-049-002-6--	42-61	B24tcn	55.3	24.9	19.8	0.08	0.09	0.04	3.92	5.00	5.0	4.13
Shubuta:[2]												
S72AL-049-004-1--	0-6	A1	67.7	25.0	7.3	0.03	0.82	0.09	4.32	17.90	5.1	5.26
S72AL-049-004-3--	12-19	B21t	31.4	34.0	34.6	0.13	1.02	0.06	7.76	13.50	4.9	8.98
S72AL-049-004-4--	19-25	B22t	10.3	47.5	42.2	0.00	1.07	0.09	11.52	9.20	4.9	12.68
S72AL-049-004-5--	25-47	B23t	11.5	47.1	41.4	0.00	1.16	0.09	10.96	10.30	4.7	12.21
S72AL-049-004-6--	47-60	B24t	29.9	30.7	39.4	0.00	1.52	0.07	8.72	15.40	4.5	10.31
S72AL-049-004-7--	60-72	B3	39.7	21.5	38.8	0.03	1.57	0.06	7.44	18.20	4.4	9.10
Smithton:[3]												
S72AL-049-003-1--	0-7	A1	48.6	45.5	5.9	0.18	0.13	0.02	2.96	10.10	4.7	3.29
S72AL-049-003-2--	7-17	A2g	51.7	41.6	6.7	0.13	0.14	0.02	2.80	9.20	4.8	3.08
S72AL-049-003-3--	17-26	B1g	56.0	37.2	6.8	0.11	0.17	0.03	2.64	10.50	4.7	2.95
S72AL-049-003-4--	26-47	B2tg	47.6	42.9	9.5	0.13	0.19	0.05	3.04	10.80	4.8	3.41
S72AL-049-003-5--	47-72	B22tg	35.1	54.9	10.0	1.61	0.30	0.03	3.12	38.20	4.7	5.05
Susquehanna:[4]												
S76AL-049-001-1--	0-3	A1	32.8	48.0	19.2	1.40	1.30	0.06	6.00	31.67	4.8	8.78
S76AL-049-001-3--	9-13	B21t	14.5	43.9	41.6	2.39	2.84	0.13	8.40	38.98	5.2	13.76
S76AL-049-001-4--	13-16	B22t	14.2	49.3	36.5	2.43	2.92	0.13	7.36	42.73	5.2	12.85
S76AL-049-001-5--	16-30	B23t	17.6	41.0	41.4	2.76	3.20	0.12	7.28	45.62	4.9	13.38
S76AL-049-001-6--	30-66	B24t	9.5	48.5	42.0	2.76	3.63	0.19	5.04	56.72	4.7	11.64

[1] Taxadjunct to series. The 40 to 72 inch layers are clay loam.
[2] Taxadjunct to series. Data shows silt content of Bt horizon is 7 percent more than allowed in Shubuta series.
[3] Taxadjunct to series. Silt content of the 47 to 72 inch layer is 5 percent more than allowed in Smithton series.
[4] Taxadjunct to series. Data shows mixed mineralogy about 50 percent kaolinite and 35 percent smectite.

TABLE 18.--ENGINEERING TEST DATA

[Dashes indicate data were not available. NP means nonplastic. TR means trace]

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution										Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve							Percentage smaller than--						
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture
													Pct		Lb/ Ft3	Pct
Bama sandy loam:[1] (S72AL-049-008)																
Ap------- 0 to 5	A-2-4(00)	SM	100	100	100	98	96	93	32	--	13	--	--	NP	111	11
B22t-----22 to 41	A-4 (01)	SC	100	100	100	91	88	87	41	--	31	--	29	9	116	13
B23t-----41 to 68	A-4 (01)	SC	100	100	100	88	83	82	40	--	35	--	32	9	113	15
Benndale sandy loam:[1, 2] (S72AL-049-007)																
A2------- 5 to 11	A-4 (00)	ML	100	100	100	99	99	96	52	--	17	--	--	NP	116	11
B21t-----16 to 40	A-4 (01)	CL-ML	100	100	100	100	99	96	59	--	28	--	25	5	116	12
B22t-----40 to 52	A-6 (09)	CL	100	100	100	100	100	98	69	--	41	--	40	15	107	17
B23t-----52 to 72	A-7-6(11)	CL	100	100	100	99	98	97	67	--	46	--	43	17	108	18
Heidel sandy loam:[3] (S72AL-049-011)																
Ap------- 0 to 9	A-4 (00)	SM	100	100	100	100	100	96	49	--	16	--	--	NP	115	11
B21t-----18 to 47	A-4 (02)	CL	100	100	100	100	100	97	59	--	28	--	25	8	118	11
B22t-----47 to 75	A-4 (00)	ML	100	100	100	100	100	96	51	--	19	--	19	NP	120	10
Heidel sandy loam:[4] (S72AL-049-006)																
B22t-----15 to 32	A-2-4(00)	SM	100	100	100	99	99	93	31	--	16	--	--	NP	121	9
B24t-----37 to 51	A-4 (00)	SM-SC	100	100	100	100	99	95	40	--	28	--	27	6	113	13
Lucedale sandy loam:[5] (S72AL-049-010)																
B21t-----10 to 40	A-4 (02)	SC	100	100	100	100	100	89	48	--	33	--	29	10	116	13
B22t-----40 to 82	A-4 (00)	SM-SC	100	100	100	100	100	89	37	--	27	--	22	5	119	11
Notcher sandy loam:[1] (S72AL-049-009)																
Apcn----- 0 to 7	A-4 (00)	SM	100	100	100	89	85	83	46	--	19	--	--	NP	112	11
B21tcn--- 7 to 16	A-4 (00)	SC	100	100	100	81	73	72	43	--	33	--	24	8	117	13
B22tcn---16 to 28	A-6 (03)	SC	100	100	100	88	82	81	50	--	34	--	30	11	113	14
B24t-----44 to 57	A-6 (07)	CL	100	100	100	94	92	91	63	--	42	--	39	14	105	19
B25t-----57 to 70	A-7-5(17)	MH	100	100	100	99	99	99	75	--	54	--	53	21	100	22
Saucier sandy loam:[1] (S72AL-049-002)																
A1------- 0 to 5	A-4 (00)	SM	100	100	100	93	89	86	45	--	26	--	--	NP	101	15
B1------- 5 to 10	A-4 (00)	SM-SC	100	100	100	90	88	85	47	--	28	--	20	4	117	11
B21t-----10 to 24	A-4 (01)	SM-SC	100	100	100	88	85	82	48	--	34	--	26	7	114	13
B22t-----24 to 30	A-4 (00)	SM-SC	100	100	100	83	78	76	41	--	32	--	27	6	115	13
B23t-----30 to 42	A-4 (00)	SM-SC	100	100	100	84	80	77	39	--	30	--	26	5	117	13
B24t-----42 to 61	A-4 (00)	SM-SC	100	--	--	88	84	80	41	--	30	--	28	6	112	15

See footnotes at end of table.

TABLE 18.--ENGINEERING TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution										Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve							Percentage smaller than--						
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture
													Pct		Lb/Ft3	Pct
Shubuta sandy loam: (S72AL-049-004)																
A1------- 0 to 6	A-4 (00)	SM	100	100	100	100	99	95	45	--	15	--	--	NP	100	16
B21t-----12 to 19	A-7-6(21)	CL	100	100	100	100	100	100	86	--	48	--	48	23	108	18
B23t-----25 to 47	A-7-6(18)	CL	100	100	100	100	100	100	82	--	53	--	41	22	109	17
B24t-----47 to 60	A-6 (14)	CL	100	100	100	100	100	99	74	--	49	--	40	21	108	16
Smithton sandy loam:[1, 7] (S72AL-049-003)																
A2g------ 7 to 17	A-4 (00)	ML	100	100	100	99	99	98	57	--	13	--	--	NP	111	12
B21tg----26 to 47	A-4 (00)	ML	100	100	100	99	99	98	57	--	15	--	--	NP	113	11

[1] Refer to "Soil series and morphology" section for location description of pedon.
[2] Taxadjunct to series. Data of 52 to 72 inch layer is outside range of Benndale series.
[3] Heidel sandy loam:
0.8 mile east of Byrd Church on powerline right-of-way, NE1/4NE1/4NE1/4SE1/4 sec. 20, T. 2 N., R. 1 W.
[4] Heidel sandy loam:
0.8 mile east of Byrd Church on powerline right-of-way, NE1/4NE1/4NE1/4SE1/4 sec. 20, T. 2 N., R. 1 W.
[5] Lucedale sandy loam:
0.25 mile south and 2 miles west of Dawes on school board land, SW1/4SW1/4SW1/4 sec. 16, T. 5 S., R. 3 W.
[6] Shubuta sandy loam:
North of Mt. Vernon on Citronelle Highway on powerline, SE1/4NE1/4SW1/4 sec. 17, T. 2 N., R. 1 W.
[7] Taxadjunct to series. Liquid limit and plasticity index data outside range of Smithton series.

TABLE 19.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

Soil name	Family or higher taxonomic class
Alaga	Thermic, coated Typic Quartzipsamments
Annemaine	Clayey, mixed, thermic Aquic Hapludults
Axis	Coarse-loamy, mixed, nonacid, thermic Typic Sulfaquents
Bama	Fine-loamy, siliceous, thermic Typic Paleudults
Bayou	Coarse-loamy, siliceous, thermic Typic Paleaquults
*Benndale	Coarse-loamy, siliceous, thermic Typic Paleudults
Bethera	Clayey, mixed, thermic Typic Paleaquults
Bibb	Coarse-loamy, siliceous, acid, thermic Typic Fluvaquents
Dorovan	Dysic, thermic Typic Medisaprists
Duckston	Siliceous, thermic Typic Psammaquents
Escambia	Coarse-loamy, siliceous, thermic Plinthaquic Paleudults
Fripp	Thermic, uncoated Typic Quartzipsamments
Grady	Clayey, kaolinitic, thermic Typic Paleaquults
Harleston	Coarse-loamy, siliceous, thermic Aquic Paleudults
Heidel	Coarse-loamy, siliceous, thermic Typic Paleudults
Izagora	Fine-loamy, siliceous, thermic Aquic Paleudults
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Lafitte	Euic, thermic Typic Medisaprists
Levy	Very-fine, mixed, acid, thermic Typic Hydraquents
Lucedale	Fine-loamy, siliceous, thermic Rhodic Paleudults
Malbis	Fine-loamy, siliceous, thermic Plinthic Paleudults
Notcher	Fine-loamy, siliceous, thermic Plinthic Paleudults
Osier	Siliceous, thermic Typic Psammaquents
Pactolus	Thermic, coated Aquic Quartzipsamments
Pamlico	Sandy or sandy-skeletal, siliceous, dysic, thermic Terric Medisaprists
Poarch	Coarse-loamy, siliceous, thermic Plinthic Paleudults
Psamments	Quartzipsamments
Robertsdale	Fine-loamy, siliceous, thermic Plinthaquic Paleudults
Saucier	Fine-loamy, siliceous, thermic Plinthaquic Paleudults
*Shubuta	Clayey, mixed, thermic Typic Paleudults
*Smithton	Coarse-loamy, siliceous, thermic Typic Paleaquults
Suffolk	Fine-loamy, siliceous, thermic Typic Hapludults
*Susquehanna	Fine, montmorillonitic, thermic Vertic Paleudalfs
Troup	Loamy, siliceous, thermic Grossarenic Paleudults

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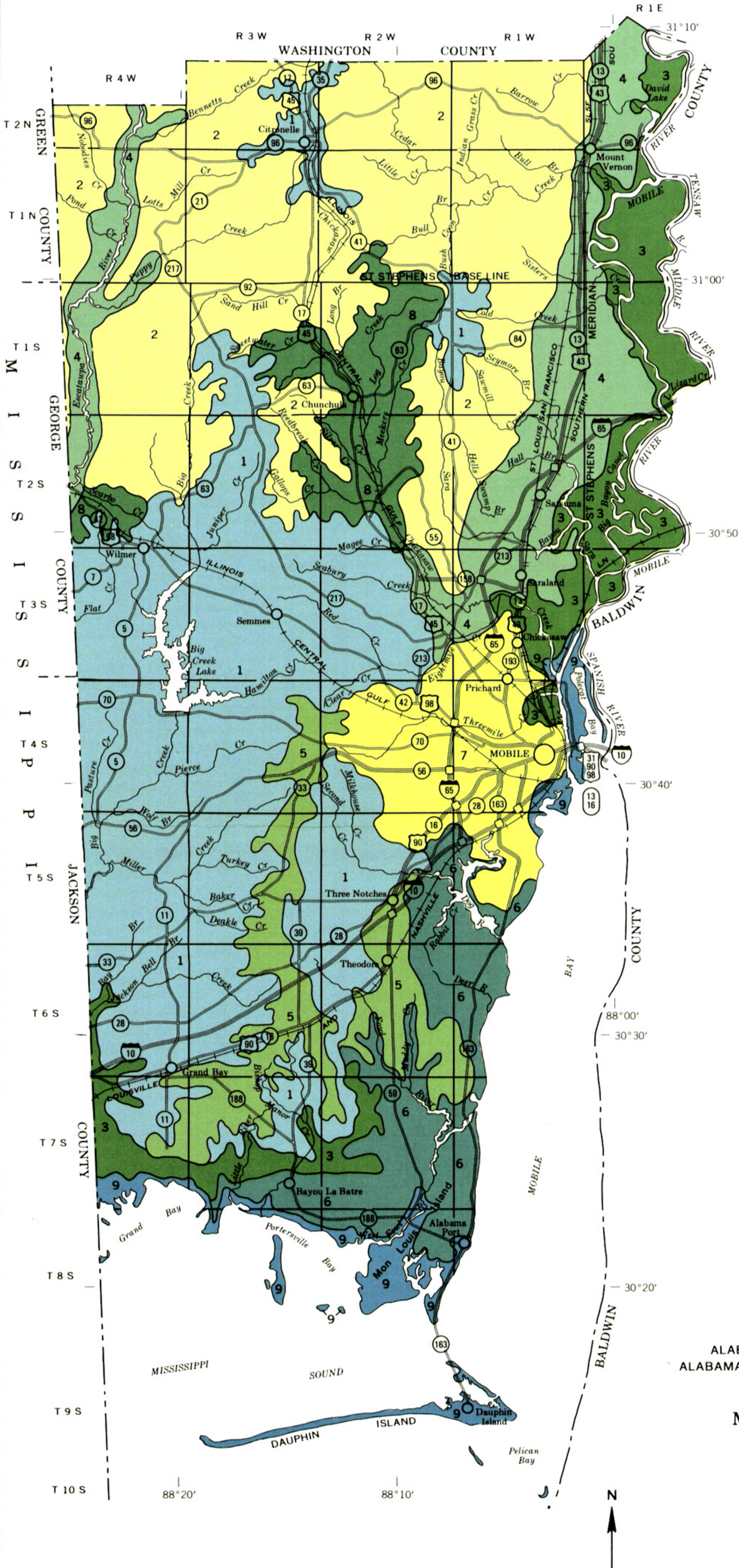


LEGEND

1 TROUP-HEIDEL-BAMA: Nearly level to undulating, well drained soils that have loamy subsoils; formed in loamy marine sediments on uplands

2 TROUP-BENNDALE-SMITHTON: Nearly level to hilly, well and poorly drained soils with loamy subsoils; formed in loamy marine and fluvial sediments on uplands

3 DOROVAN-JOHNSTON-LEVY: Nearly level, very poorly drained, mucky and loamy soils; formed in thick deposits of organic residues and alluvial sediments on bottomlands

4 IZAGORA-BETHERA-SUFFOLK: Nearly level to undulating, well to poorly drained soils that have loamy and clayey subsoils; formed in loamy and clayey marine and alluvial sediments on terraces

5 NOTCHER-SAUCIER-MALBIS: Nearly level to gently undulating, moderately well drained soils that have loamy subsoils with plinthite; formed in loamy and clayey marine sediments on uplands

6 BAYOU-ESCAMBIA-HARLESTON: Nearly level to gently undulating, poorly to moderatley well drained soils with loamy subsoils; formed in marine and fluvial sediments on uplands and terraces

7 URBAN LAND-SMITHTON-BENNDALE: Nearly level to gently rolling Urban land areas that are intermingled with poorly drained and well drained soils that have loamy subsoils; formed in loamy marine and fluvial sediments on uplands

8 SHUBUTA-TROUP-BENNDALE: Gently undulating to rolling, well drained soils that have clayey and loamy subsoils; formed in clayey and loamy marine sediments on uplands

9 AXIS-LAFITTE: Nearly level, very poorly drained, loamy mineral soils and organic soils; formed in loamy marine sediments and thick herbaceous plant remains on coastal marshes

Compiled 1979

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALABAMA AGRICULTURAL EXPERIMENT STATION
ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES

GENERAL SOIL MAP

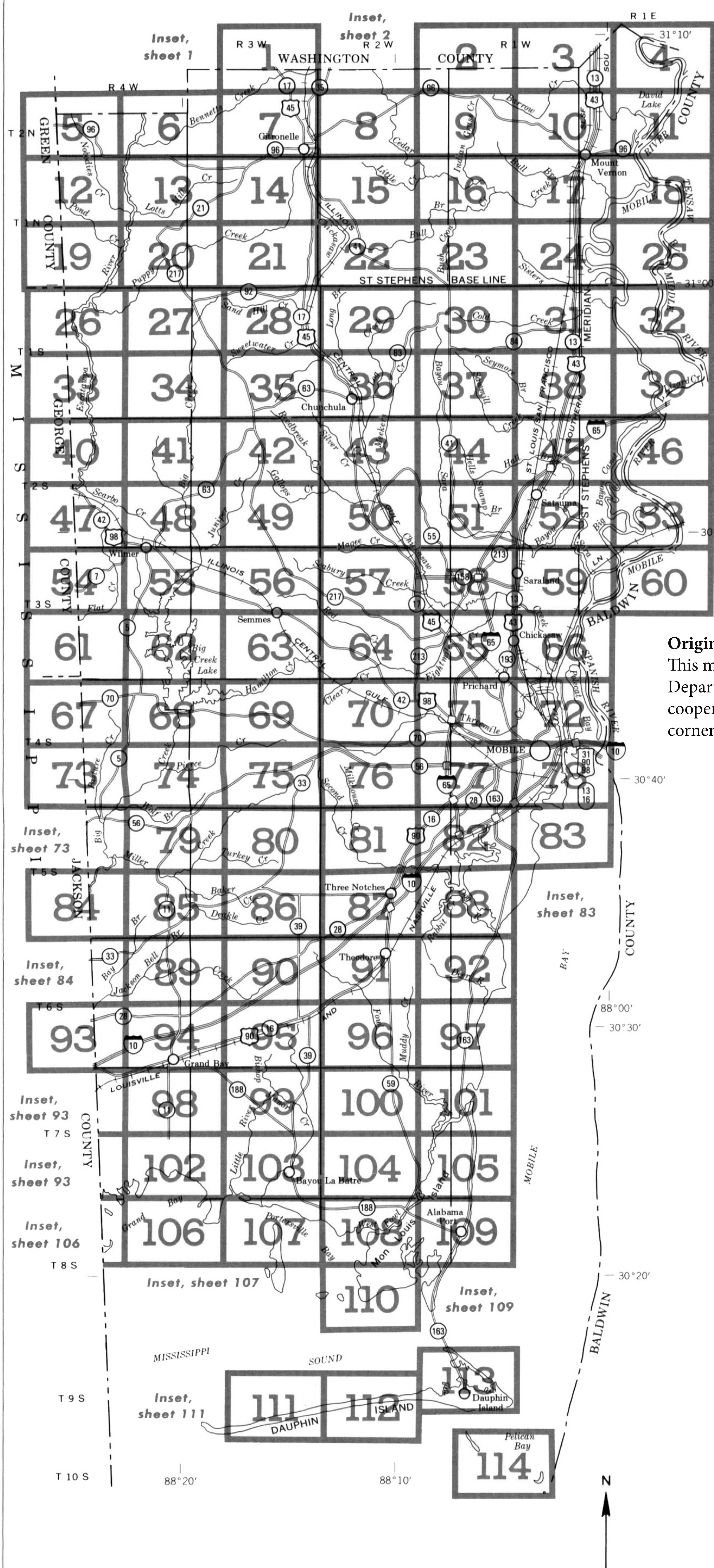
MOBILE COUNTY, ALABAMA

Scale 1:316,800

1 0 1 2 3 4 5 Miles

1 0 5 10 Km

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



Original text from each individual map sheet read:
This map is compiled on 1970 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

INDEX TO MAP SHEETS
MOBILE COUNTY, ALABAMA

Scale 1:316,800

1 0 1 2 3 4 5 Miles

1 0 5 10 Km

SOIL LEGEND

SYMBOL	NAME
2	Alaga-Harleston association, undulating
3	Axis mucky sandy clay loam, 0 to 1 percent slopes
4	Bama sandy loam, 0 to 2 percent slopes
5	Bama sandy loam, 2 to 5 percent slopes
6	Bama sandy loam, 5 to 8 percent slopes
7	Bayou-Escambia association, gently undulating
8	Beaches
9	Benndale sandy loam, 0 to 2 percent slopes
10	Benndale sandy loam, 2 to 5 percent slopes
11	Benndale sandy loam, 5 to 8 percent slopes
12	Benndale-Urban land complex, 0 to 8 percent slopes
13	Dorovan-Bibb association, 0 to 1 percent slopes
14	Dorovan-Levy association, 0 to 1 percent slopes
15	Duckston sand, 0 to 2 percent slopes
16	Escambia sandy loam, 0 to 2 percent slopes
17	Escambia-Urban land complex, 0 to 2 percent slopes
18	Fripp sand, rolling
19	Grady loam, 0 to 1 percent slopes
20	Harleston sandy loam, 0 to 2 percent slopes
21	Harleston-Urban land complex, 0 to 2 percent slopes
22	Heidel sandy loam, 0 to 2 percent slopes
23	Heidel sandy loam, 2 to 5 percent slopes
24	Heidel sandy loam, 5 to 8 percent slopes
25	Izagora-Annemaine association, moderately undulating
26	Izagora-Bethera association, gently undulating
27	Johnston-Pamlico association, 0 to 1 percent slopes
28	Lafitte muck, 0 to 1 percent slopes
29	Lucedale sandy loam, 0 to 2 percent slopes
30	Malbis sandy loam, 0 to 2 percent slopes
31	Malbis sandy loam, 2 to 5 percent slopes
32	Notcher sandy loam, 0 to 2 percent slopes
33	Notcher sandy loam, 2 to 5 percent slopes
34	Notcher sandy loam, 5 to 8 percent slopes
35	Osier loamy sand, 0 to 2 percent slopes
36	Pactolus loamy sand, 0 to 2 percent slopes
37	Pamlico-Bibb complex, 0 to 1 percent slopes
38	Pits
39	Poarch sandy loam, 0 to 2 percent slopes
40	Psamments
41	Robertsdale loam, 0 to 1 percent slopes
42	Saucier sandy loam, 0 to 2 percent slopes
43	Shubuta sandy loam, 2 to 5 percent slopes
44	Shubuta-Troup association, rolling
45	Smithton sandy loam, 0 to 1 percent slopes
46	Smithton-Urban land complex, 0 to 1 percent slopes
47	Smithton-Benndale association, undulating
48	Suffolk-Smithton association, gently undulating
49	Susquehanna-Harleston association, moderately undulating
50	Troup loamy sand, 0 to 5 percent slopes
51	Troup loamy sand, 5 to 8 percent slopes
52	Troup-Heidel complex, 8 to 12 percent slopes
53	Troup-Urban land complex, 0 to 8 percent slopes
54	Troup-Urban land complex, 8 to 12 percent slopes
55	Troup-Benndale association, rolling
56	Troup-Heidel association, undulating
57	Urban land

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool (Davis Airstrip; FLOOD POOL LINE)

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEMS & DESIGNATIONS

- Interstate (79)
- Federal (410)
- State (52)
- County, farm or ranch (378)

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small (water; w)

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) (Indian Mound)
- Located object (label) (Tower)
- Tank (label) (GAS)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) (CANAL)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial (water; w)
- Intermittent (int; i)

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS (CeA; FoB2)

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

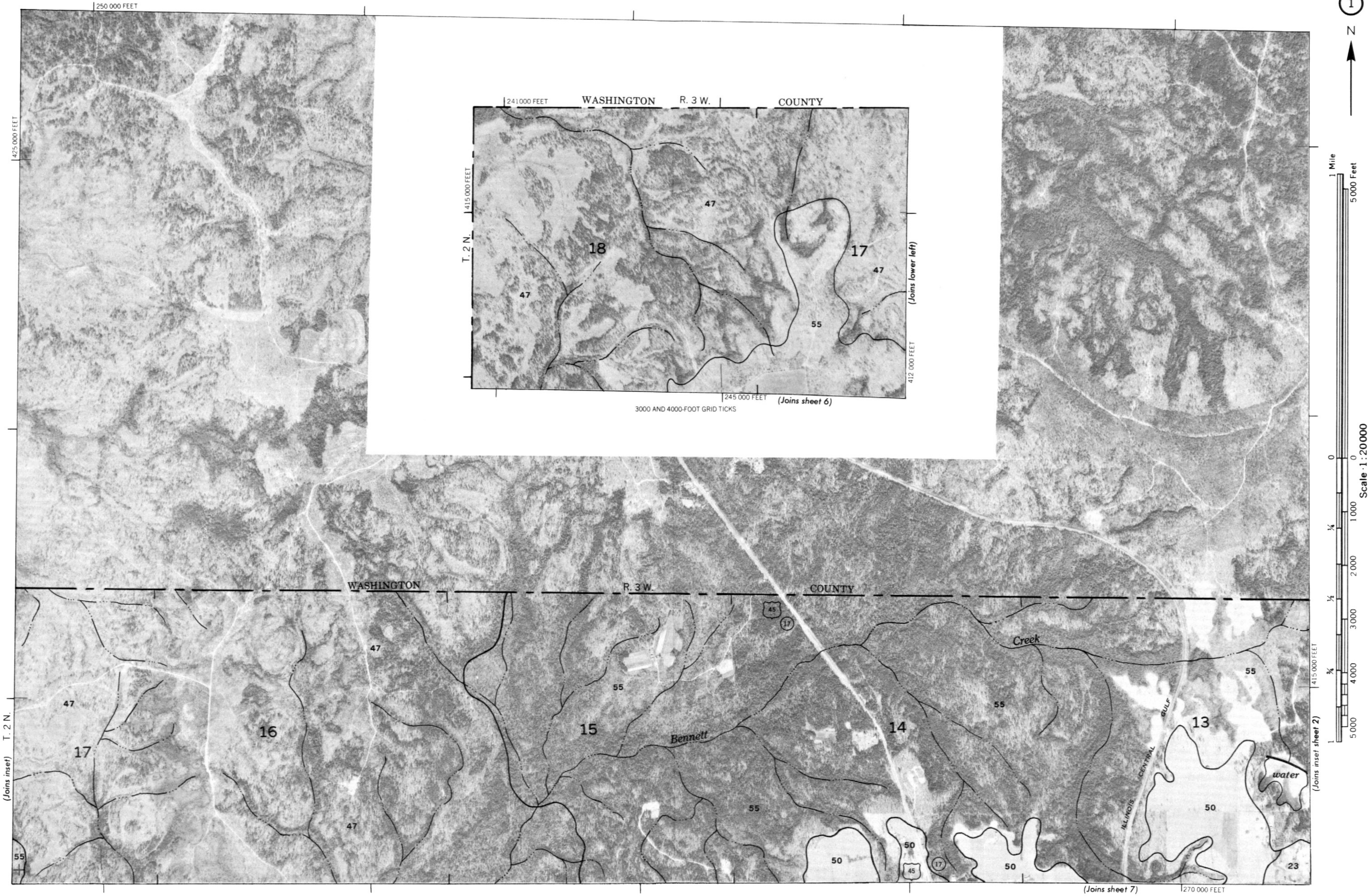
GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

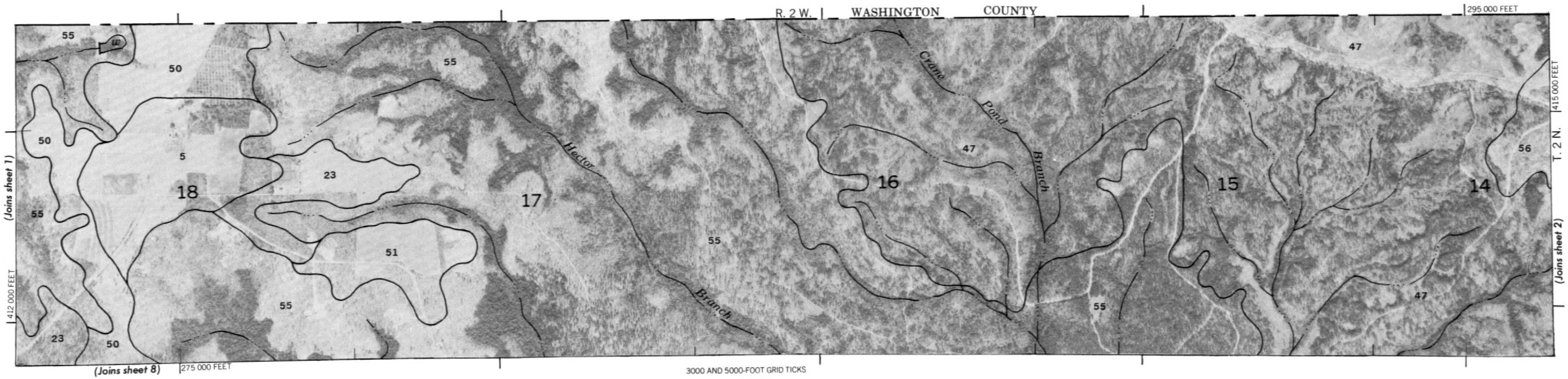
- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot


1
N
250 000 FEET
425 000 FEET
241000 FEET
WASHINGTON
R. 3 W.
COUNTY
415 000 FEET
T. 2 N.
47
18
17
47
47
55
(Joins lower left)
412 000 FEET
245 000 FEET
(Joins sheet 6)
3000 AND 4000-FOOT GRID TICKS
WASHINGTON
R. 3 W.
COUNTY
45
17
Creek
47
55
55
55
415 000 FEET
47
T. 2 N.
16
15
Bennett
14
13
17
GULF
CENTRAL
ILLINOIS
(Joins inset)
water
(Joins inset sheet 2)
55
47
55
50
50
50
50
45
17
50
23
(Joins sheet 7)
270 000 FEET
1 Mile
5000 Feet
Scale 1:20000

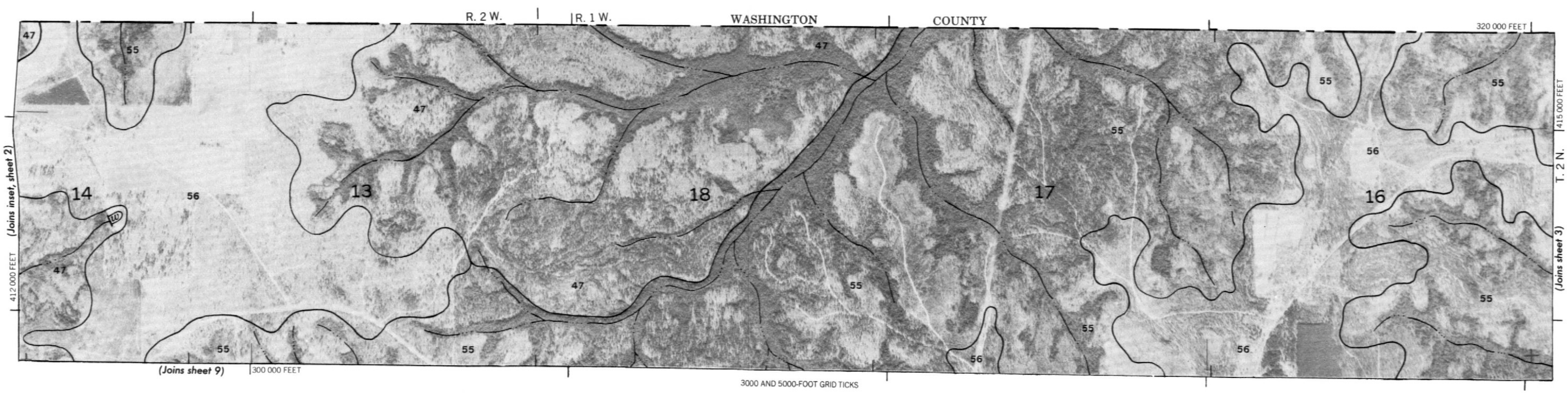
2

N

1 Mile
5000 Feet
0
Scale 1:20000



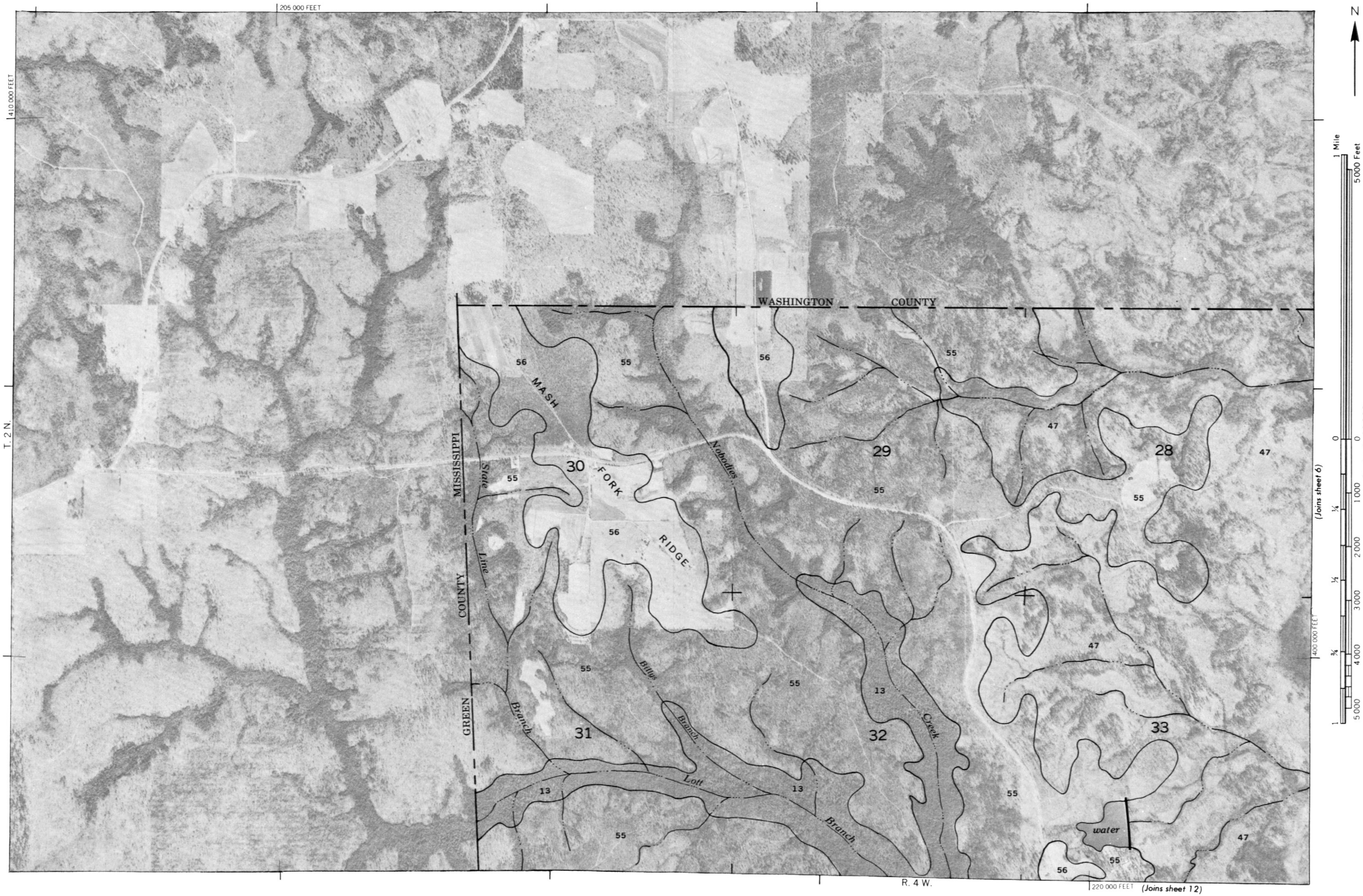
INSET

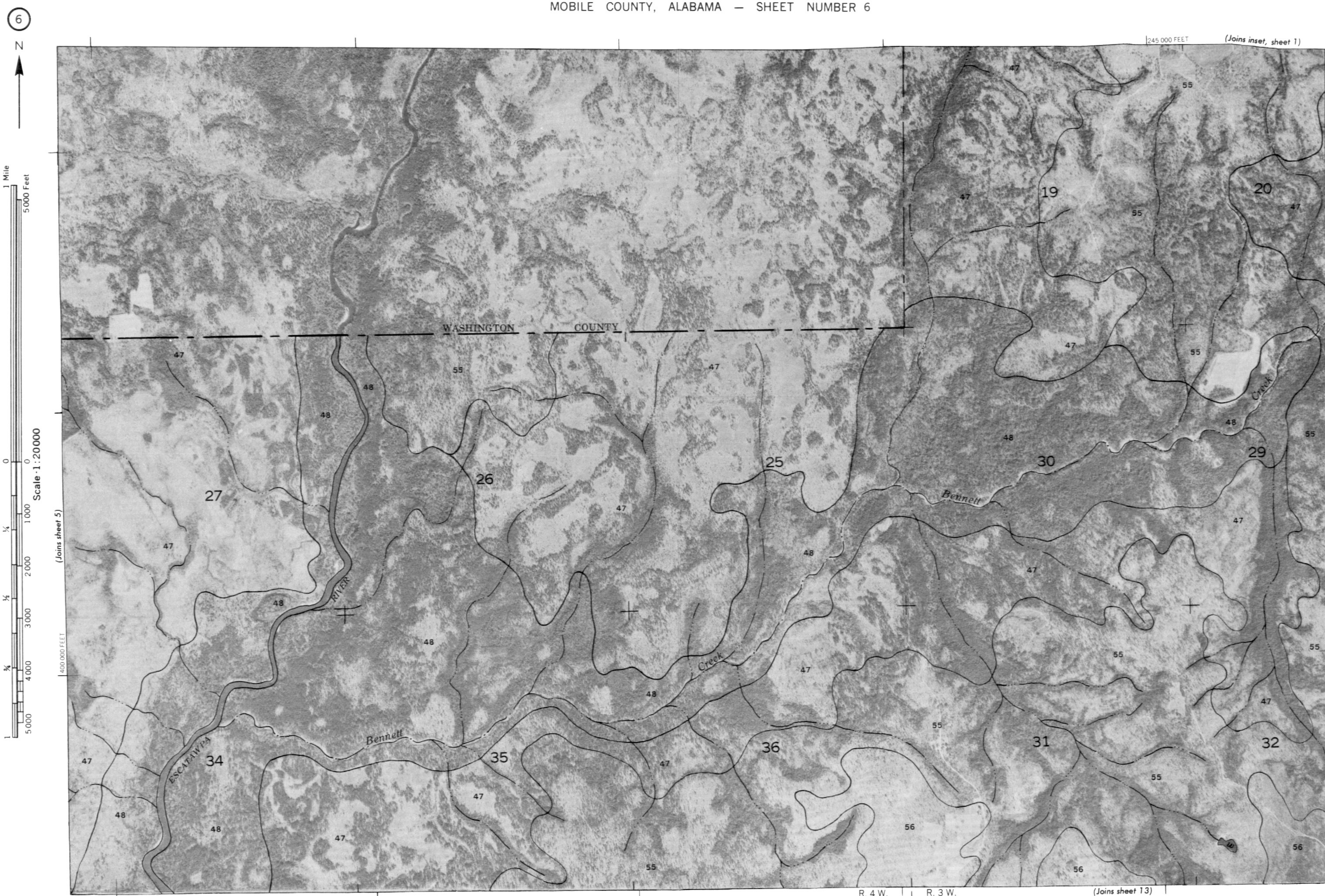


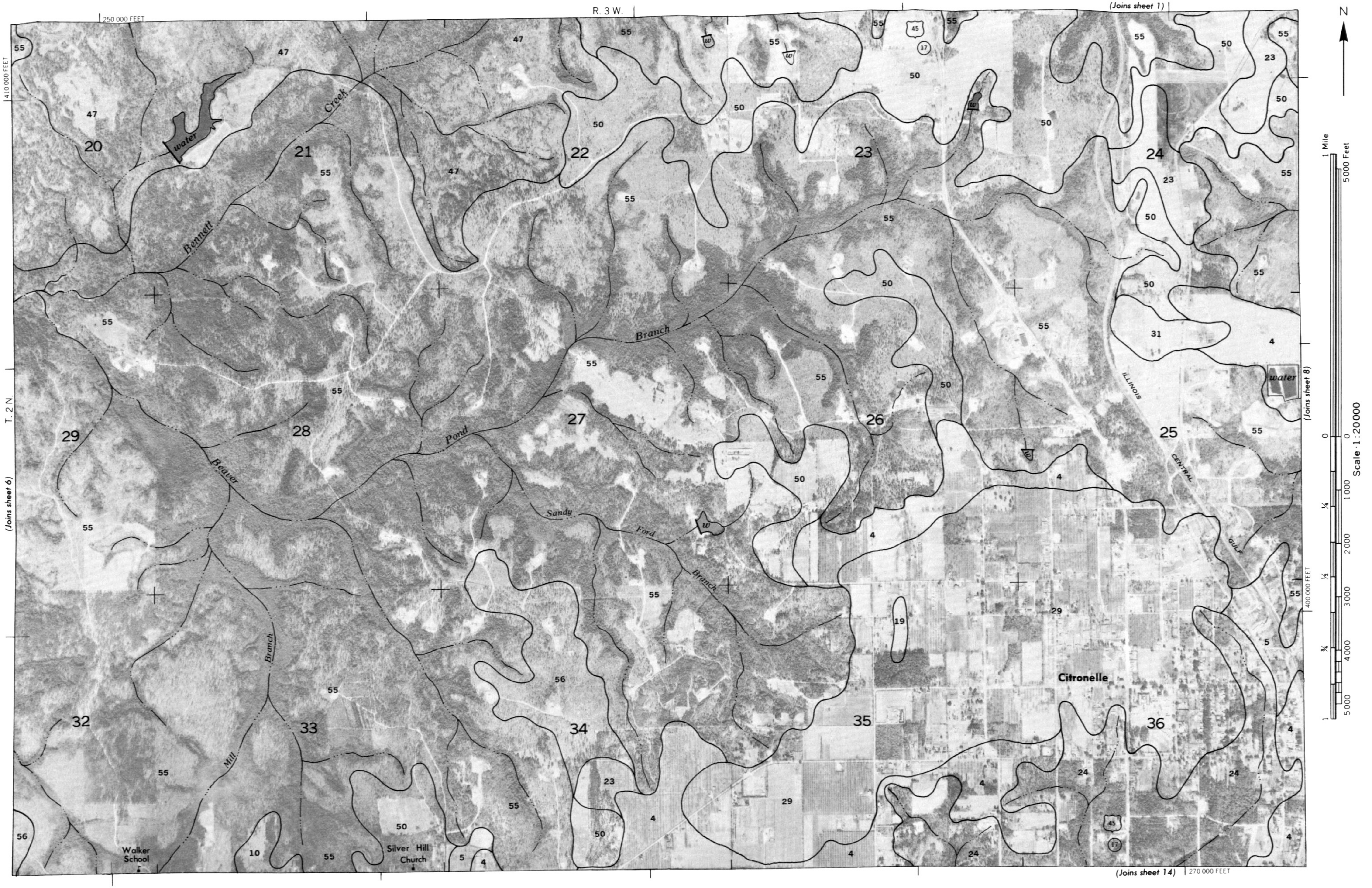
MOBILE COUNTY, ALABAMA — SHEET NUMBER 3


4
N
WASHINGTON
COUNTY
BALDWIN
COUNTY
MOBILE
RIVER
365 000 FEET
425 000 FEET
415 000 FEET
345 000 FEET
T. 2 N.
R. 1 E.
(Joins sheet 3)
(Joins sheet 11)
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1
26
6
7
25
13
12
10
11
21
14
22
20
24
23
54
31

5

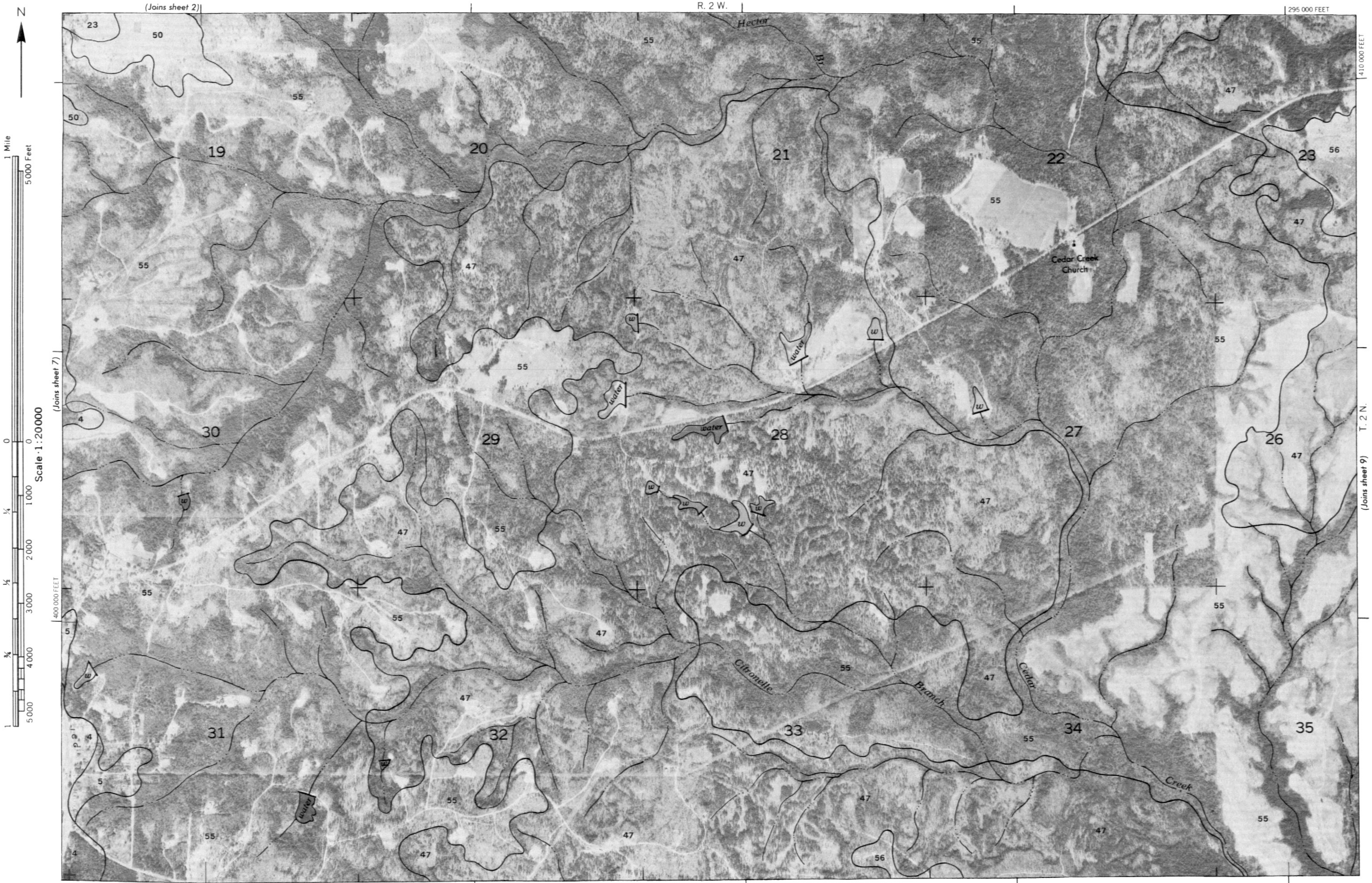

205 000 FEET
410 000 FEET
400 000 FEET
220 000 FEET
T. 2 N.
R. 4 W.
(Joins sheet 6)
(Joins sheet 12)
N
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000
WASHINGTON COUNTY
MISSISSIPPI
COUNTY
GREEN
State
Line
Branch
MASH
FORK
RIDGE
Nobodies
Creek
Billys
Branch
Lott
Branch
water
28
29
30
31
32
33
13
47
55
56


6
N
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins inset, sheet 1)
245 000 FEET
410 000 FEET
(Joins sheet 5)
(Joins sheet 7)
400 000 FEET
225 000 FEET
(Joins sheet 13)
R. 4 W.
R. 3 W.
T. 2 N.
WASHINGTON
COUNTY
ESCATAWPA
RIVER
Bennett
Creek
19
20
25
26
27
29
30
31
32
34
35
36
47
48
55
56

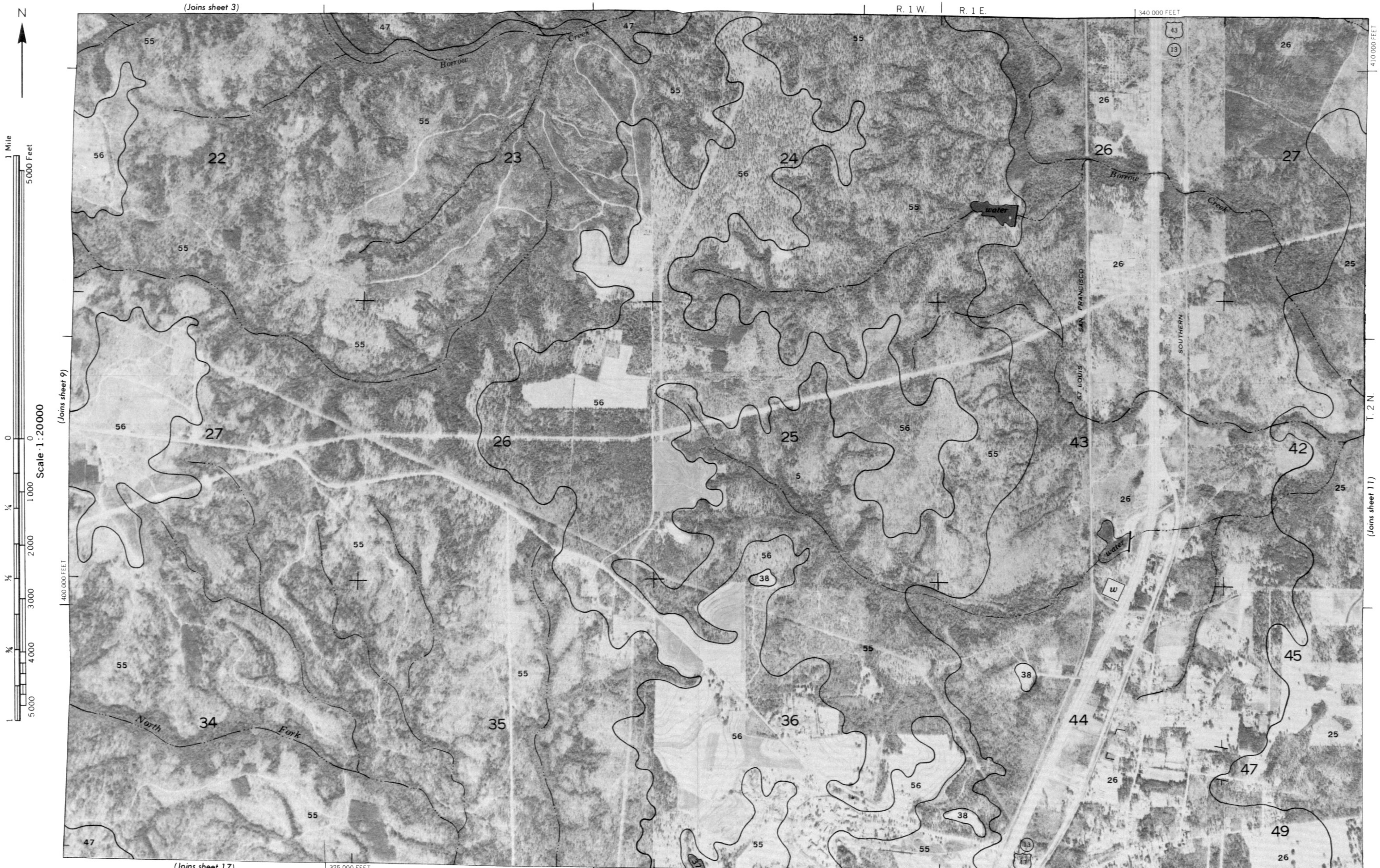


R. 3 W.
(Joins sheet 1)
250 000 FEET
410 000 FEET
T. 2 N.
(Joins sheet 6)
(Joins sheet 8)
(Joins sheet 14)
400 000 FEET
270 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
Bennett
Creek
Branch
Pond
Beaver
Sandy
Ford
Branch
Mill
Branch
water
ILLINOIS
CENTRAL
GULF
Citronelle
Walker School
Silver Hill Church
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36

8


N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 2)
R. 2 W.
295 000 FEET
410 000 FEET
(Joins sheet 7)
(Joins sheet 9)
T. 2 N.
(Joins sheet 15)
275 000 FEET
400 000 FEET
Hector Br.
Cedar Creek Church
Citronelle Branch
Cedar Creek
water
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35
4
5
23
47
50
55
56

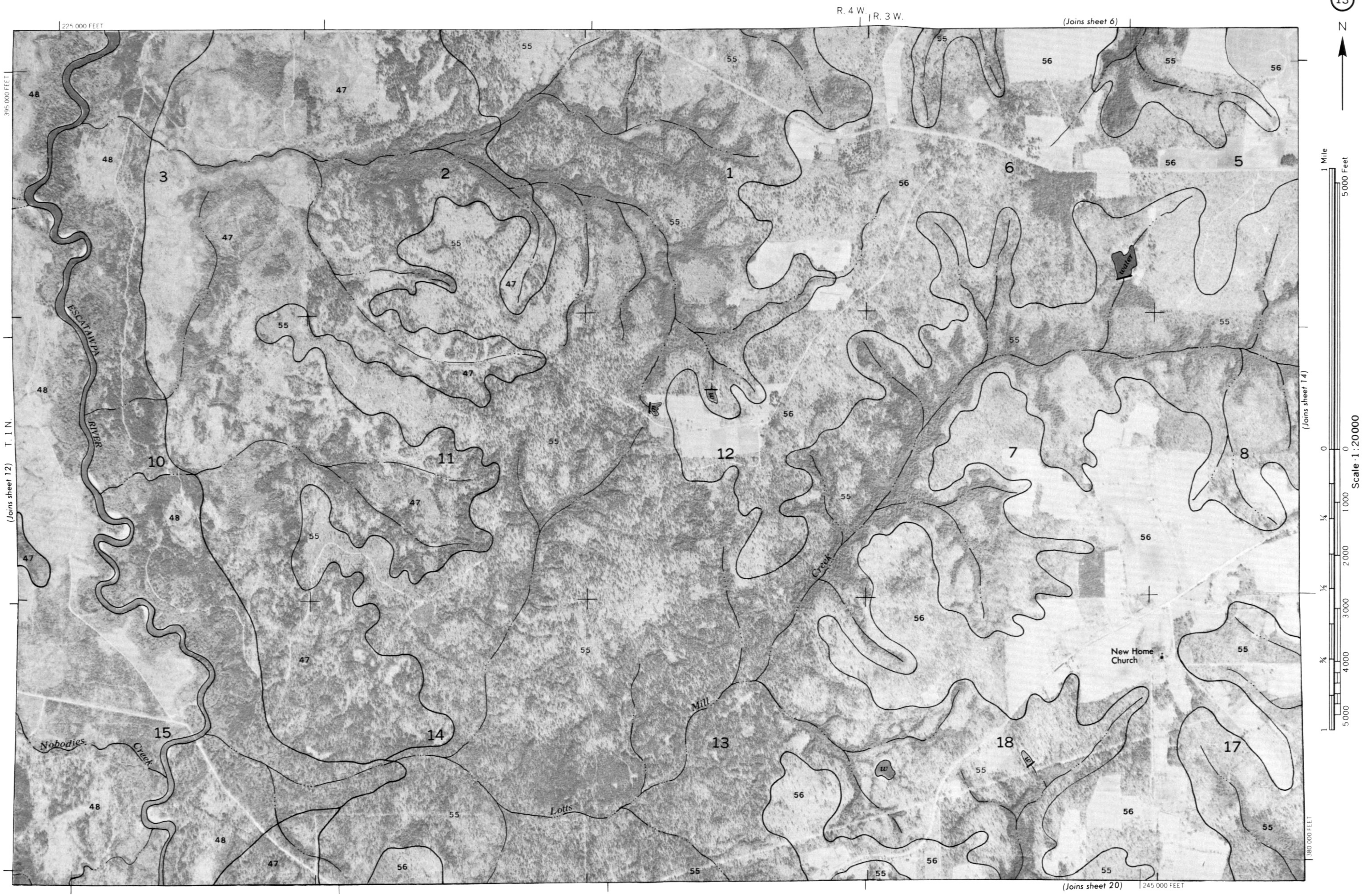
MOBILE COUNTY, ALABAMA — SHEET NUMBER 9

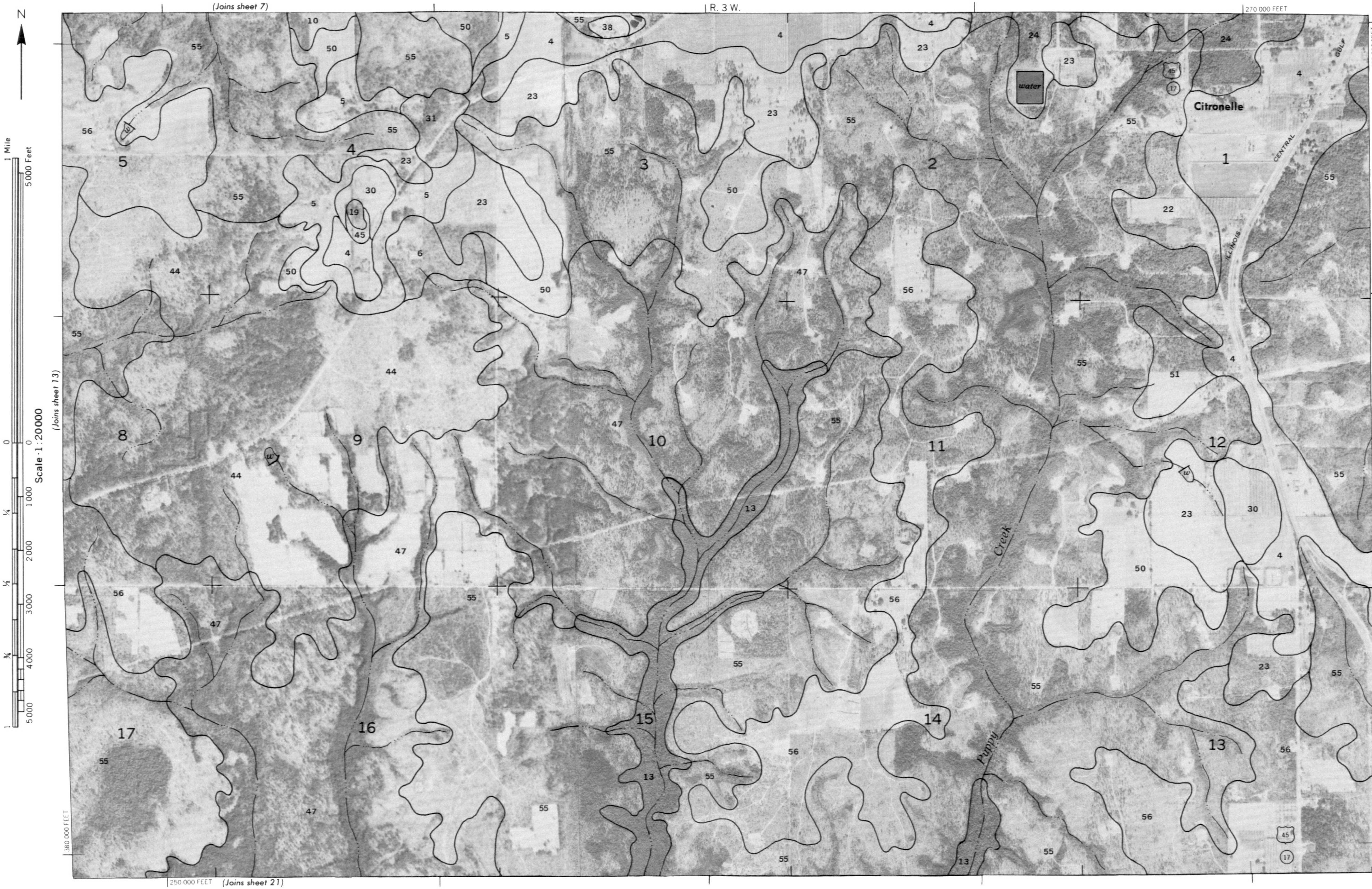

N
1 Mile
5 000 Feet
Scale 1:20000
0
¼
½
¾
1
0
1000
2000
3000
4000
5000
(Joins sheet 3)
(Joins sheet 9)
(Joins sheet 11)
(Joins sheet 17)
R. 1 W.
R. 1 E.
T. 2 N.
340 000 FEET
410 000 FEET
400 000 FEET
325 000 FEET
Borrow Creek
North Fork
water
w
ST. LOUIS SAN FRANCISCO
SOUTHERN
43
13
22
23
24
25
26
27
34
35
36
42
43
44
45
47
49
5
25
26
37
38
47
55
56

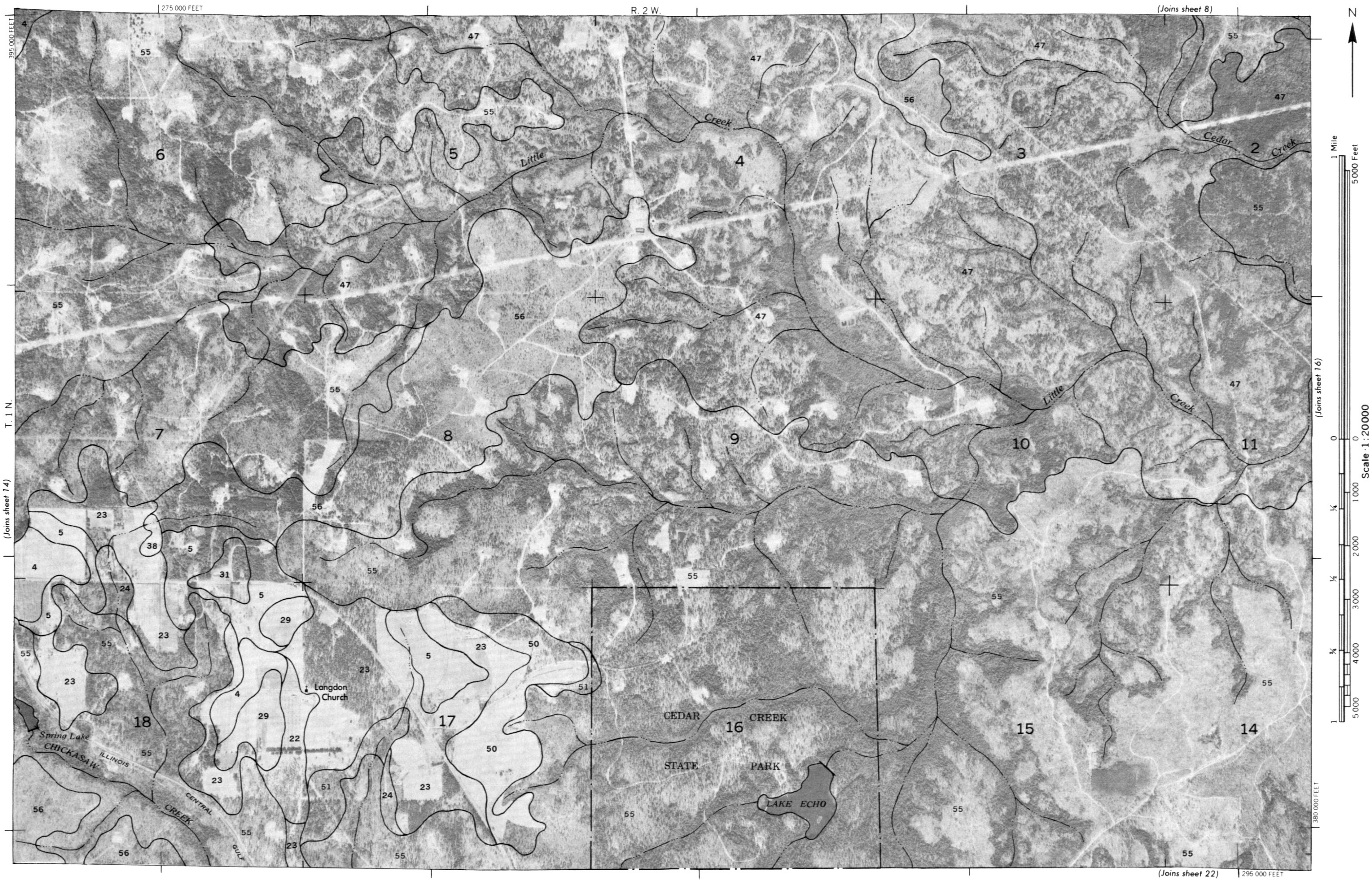

11
N
(Joins sheet 4)
R. 1 E.
345 000 FEET
410 000 FEET
T. 2 N.
(Joins sheet 10)
(Joins sheet 18)
365 000 FEET
395 000 FEET
Dabney Creek
Creek
Borrow
SHEPPARD LAKE
DAVID LAKE
Fort Stoddard
Morning Star Church
MOBILE RIVER
MOBILE COUNTY
BALDWIN
54
26
25
27
23
22
14
31
30
28
29
42
41
40
51
50
45
46
47
48
49
1 Mile
5000 Feet
Scale 1:20000

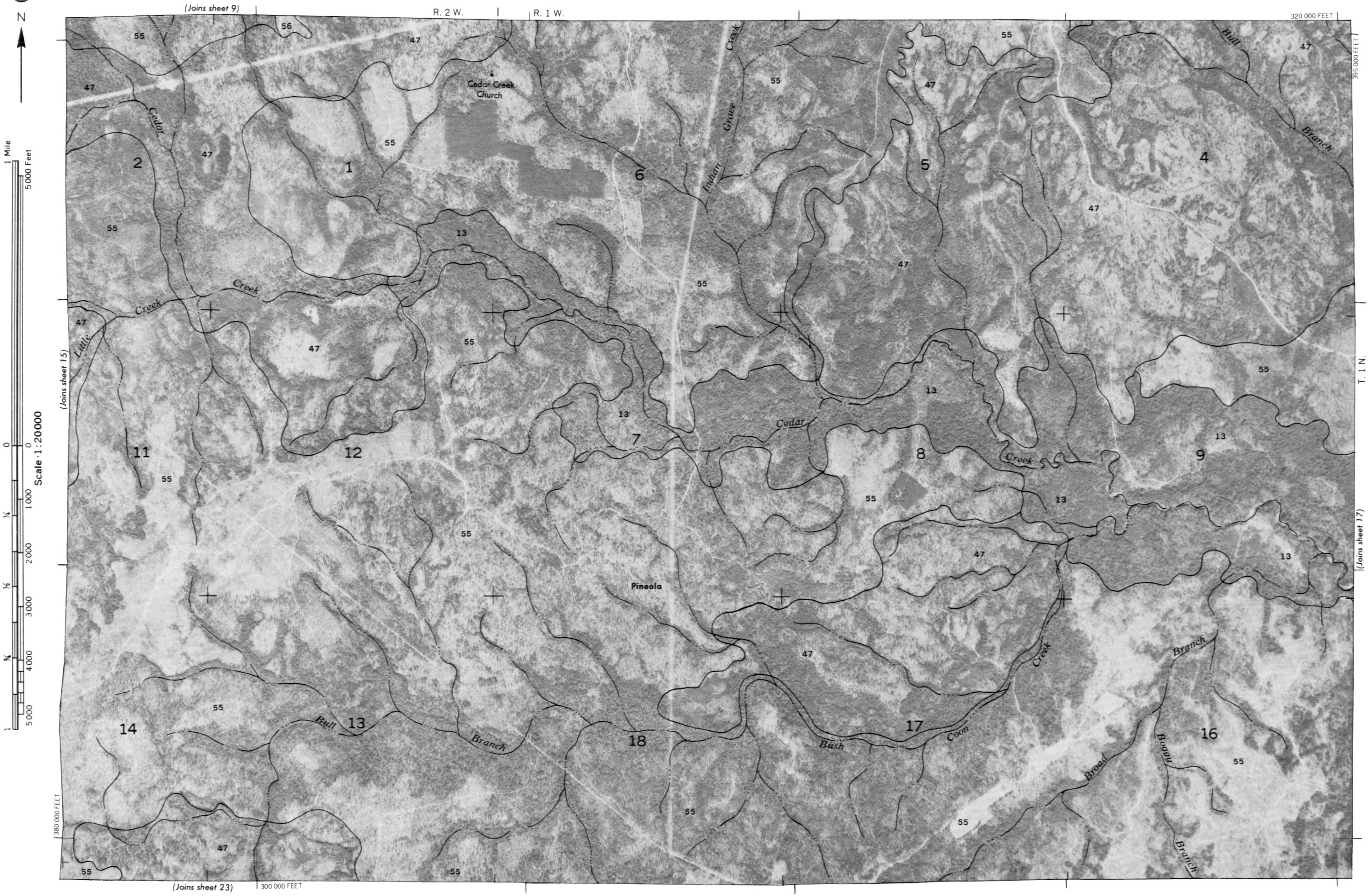

12
N
(Joins sheet 5)
R. 4 W.
220 000 FEET
395 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
MISSISSIPPI
GREEN
COUNTY
LOTT
FORK
RIDGE
Denmark
Spring
Branch
Nobodies
Creek
Pond
Creek
T. 1 N.
(Joins sheet 13)
380 000 FEET
205 000 FEET
(Joins sheet 19)
water
w
13
47
48
55
56
4
5
6
7
8
9
16
17
18

13


R. 4 W.
R. 3 W.
(Joins sheet 6)
225 000 FEET
395 000 FEET
T. 1 N.
(Joins sheet 12)
(Joins sheet 14)
(Joins sheet 20)
245 000 FEET
380 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
ESCATAWPA
RIVER
Nobodies
Creek
Mill
Creek
Lotts
New Home Church
water
w
1
2
3
5
6
7
8
10
11
12
13
14
15
17
18
47
48
55
56

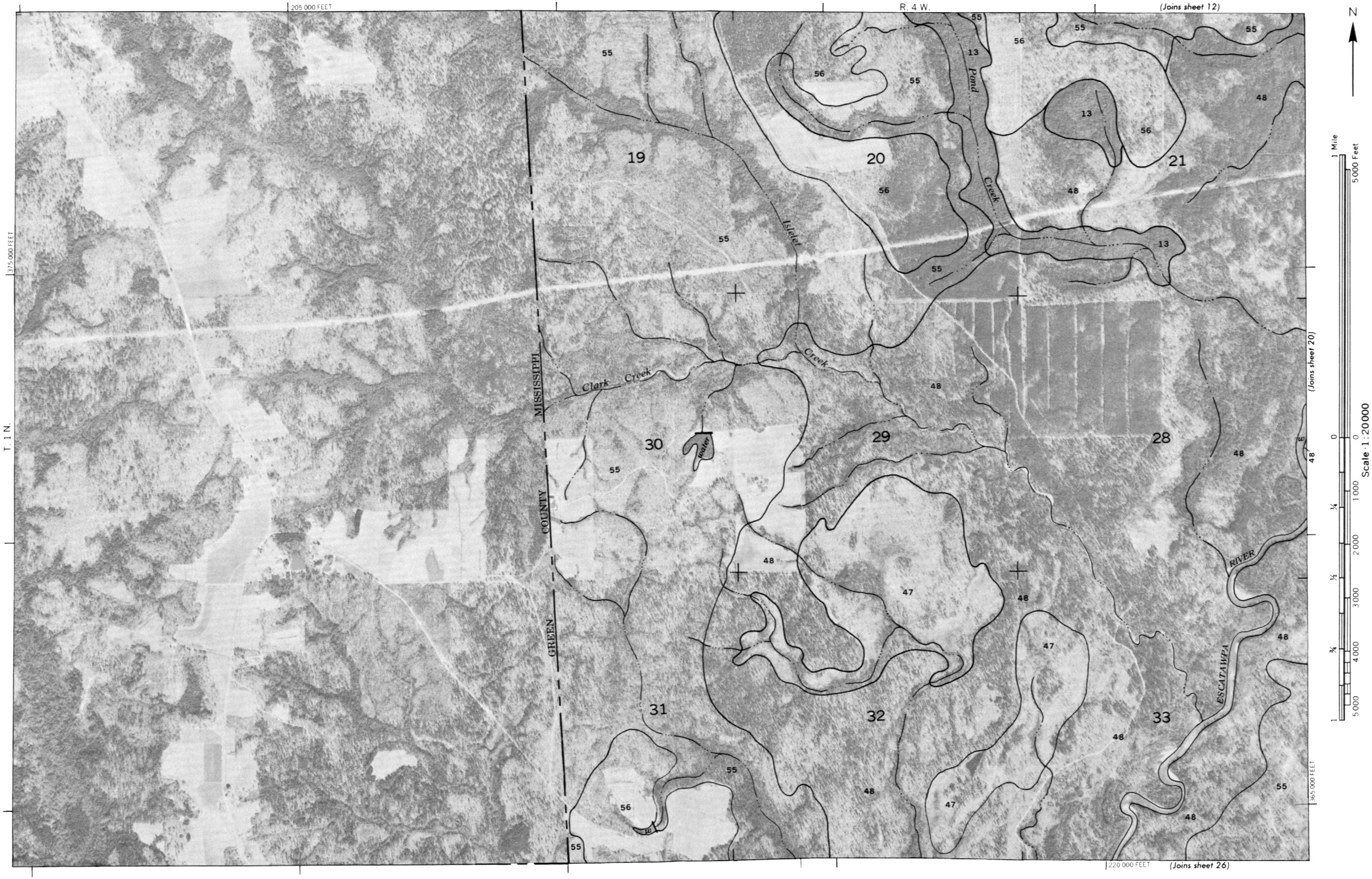

N
(Joins sheet 7)
R. 3 W.
270 000 FEET
395 000 FEET
(Joins sheet 13)
(Joins sheet 15)
T. 1 N.
(Joins sheet 21)
250 000 FEET
380 000 FEET
Citronelle
water
Creek
Puppy
ILLINOIS
CENTRAL
GULF
Scale 1:20000
1 Mile
5 000 Feet
0
1000
2000
3000
4000
5000

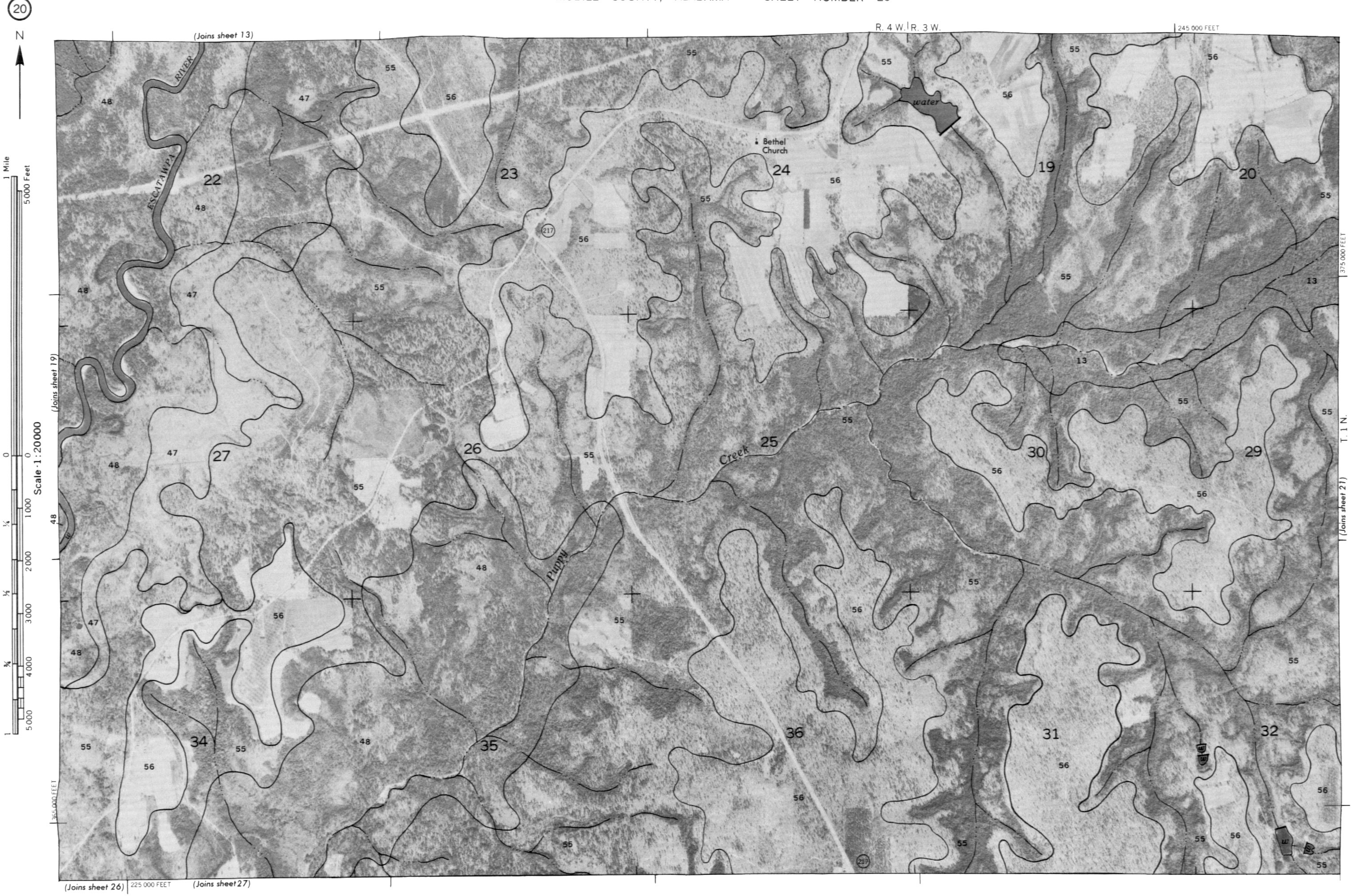

275 000 FEET
R. 2 W.
(Joins sheet 8)
395 000 FEET
T. 1 N.
(Joins sheet 14)
(Joins sheet 16)
(Joins sheet 22)
380 000 FEET
295 000 FEET
N
Little Creek
Cedar Creek
Langdon Church
Spring Lake
CHICKASAW CREEK
ILLINOIS CENTRAL GULF
CEDAR CREEK STATE PARK
LAKE ECHO
1 Mile
5000 Feet
Scale 1:20000

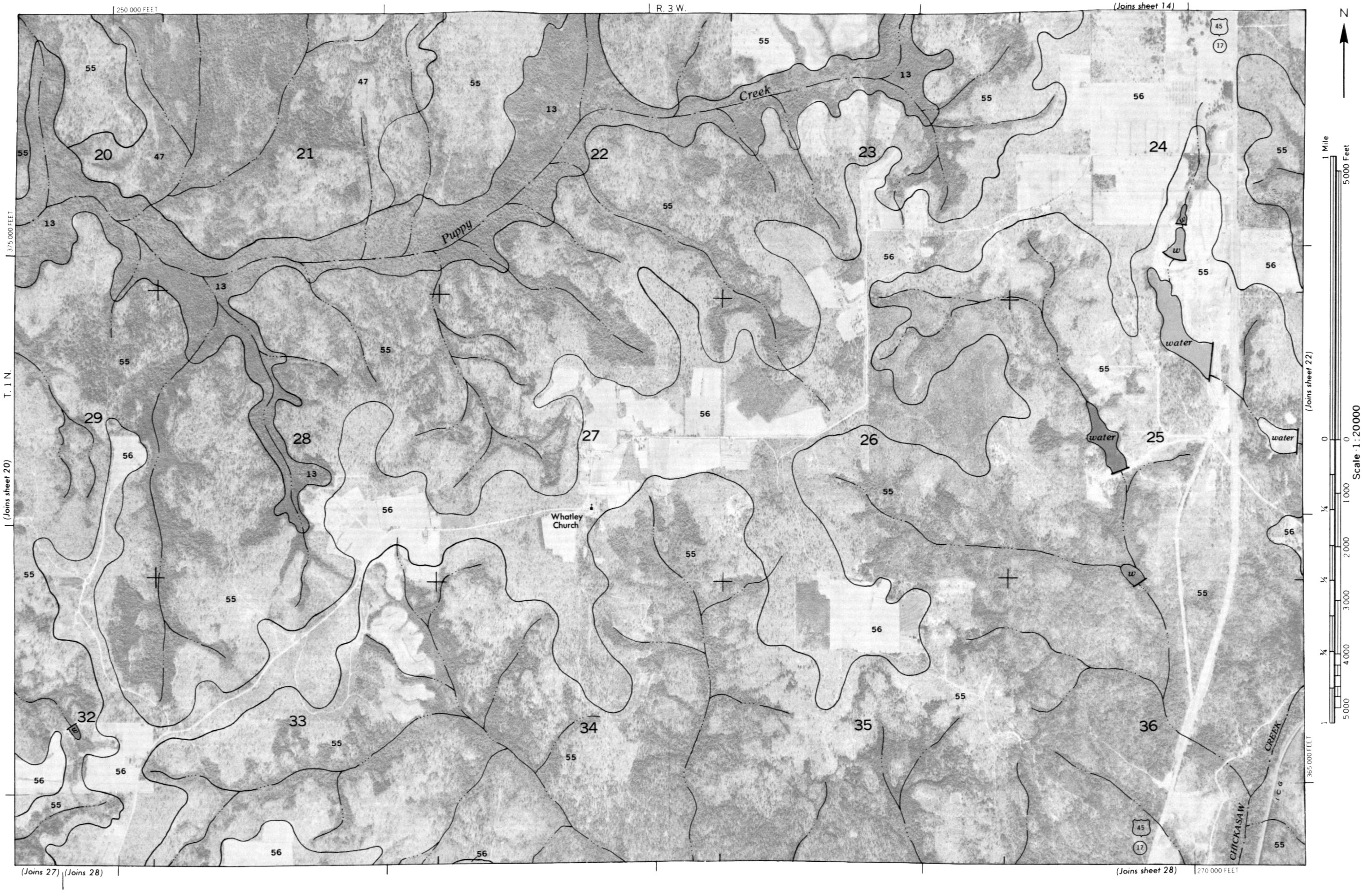

N
(Joins sheet 9)
R. 2 W.
R. 1 W.
320 000 FEET
395 000 FEET
T. 1 N.
(Joins sheet 15)
(Joins sheet 17)
(Joins sheet 23)
300 000 FEET
380 000 FEET
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
Cedar Creek Church
Pineola
Cedar Creek
Little Creek
Indian Grave Creek
Bull Branch
Cedar Creek
Coon Creek
Bush Creek
Broad Branch
Boggy Branch
Bull Branch
1
2
4
5
6
7
8
9
11
12
13
14
16
17
18
13
47
55
56

17
N
325 000 FEET
395 000 FEET
R. 1 W.
R. 1 E.
(Joins sheet 10)
(Joins sheet 16)
(Joins sheet 18)
(Joins sheet 24)
340 000 FEET
380 000 FEET
T. 1 N.
Mount Vernon
Movico
Williams Chapel
SEWAGE LAGOON
water
North Fork
Bull Branch
Cedar Creek
Spring Branch
MOBILE RIVER
ST LOUIS SAN FRANCISCO
SOUTHERN
43
13
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000


(Joins sheet 11)
R. 1 E.
365 000 FEET
390 000 FEET
T. 1 N.
(Joins sheet 17)
380 000 FEET
345 000 FEET
(Joins sheet 25)
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
MOBILE
RIVER
BALDWIN
COUNTY
TENSAW
RIVER
MOBILE
RIVER
LOUIS LAKE
w
w
25
26
42
14
5
4
14
25
14
10
8
9
26
14
14
11
55
39
14
17
14
16
15
14
14
56


205 000 FEET
R. 4 W.
(Joins sheet 12)
375 000 FEET
T. 1 N.
MISSISSIPPI
COUNTY
GREEN
Clark Creek
Isletet Creek
Pond Creek
Water
ESCATAWPA RIVER
19
20
21
28
29
30
31
32
33
55
56
13
48
47
(Joins sheet 20)
365 000 FEET
220 000 FEET
(Joins sheet 26)
N
1 Mile
5 000 Feet
Scale 1:20000


20
N
(Joins sheet 13)
R. 4 W. | R. 3 W.
245 000 FEET
375 000 FEET
T. 1 N.
(Joins sheet 19)
(Joins sheet 21)
(Joins sheet 26)
225 000 FEET
(Joins sheet 27)
365 000 FEET
ESCATAWPA RIVER
Bethel Church
water
Puppy Creek
217
1 Mile
5000 Feet
Scale 1:20000
0 ¼ ½ ¾ 1
0 1000 2000 3000 4000 5000
19 20 22 23 24 25 26 27 29 30 31 32 34 35 36
13 47 48 55 56

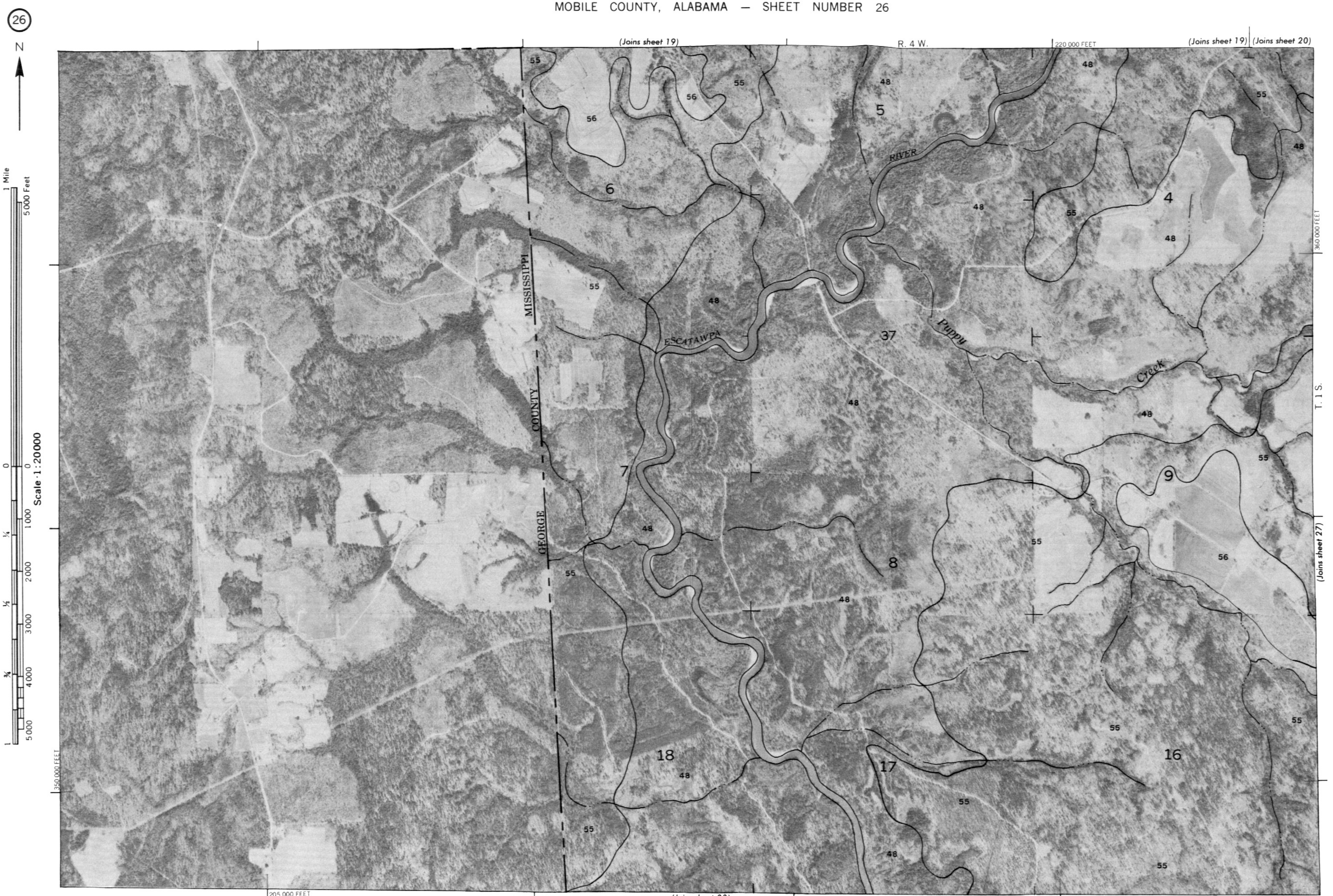

21
N
250 000 FEET
R. 3 W.
(Joins sheet 14)
375 000 FEET
T. 1 N.
(Joins sheet 20)
(Joins sheet 22)
365 000 FEET
(Joins 27)
(Joins 28)
(Joins sheet 28)
270 000 FEET
Puppy
Creek
Whatley Church
CHICKASAW CREEK
water
w
45
17
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
13
47
55
56
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
0
1000
2000
3000
4000
5000


N
(Joins sheet 15)
R. 2 W.
295 000 FEET
375 000 FEET
T. 1 N.
(Joins sheet 21)
(Joins sheet 23)
(sh 28)
(Joins sheet 29)
275 000 FEET
365 000 FEET
1 Mile
5000 Feet
Scale 1:20000
Lambert Church
St. Annes Church
Celeste Road Church
CHICKASAW CREEK
GULF
CENTRAL
ILLINOIS
Bull
Branch
water
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35
23
38
44
47
55
56

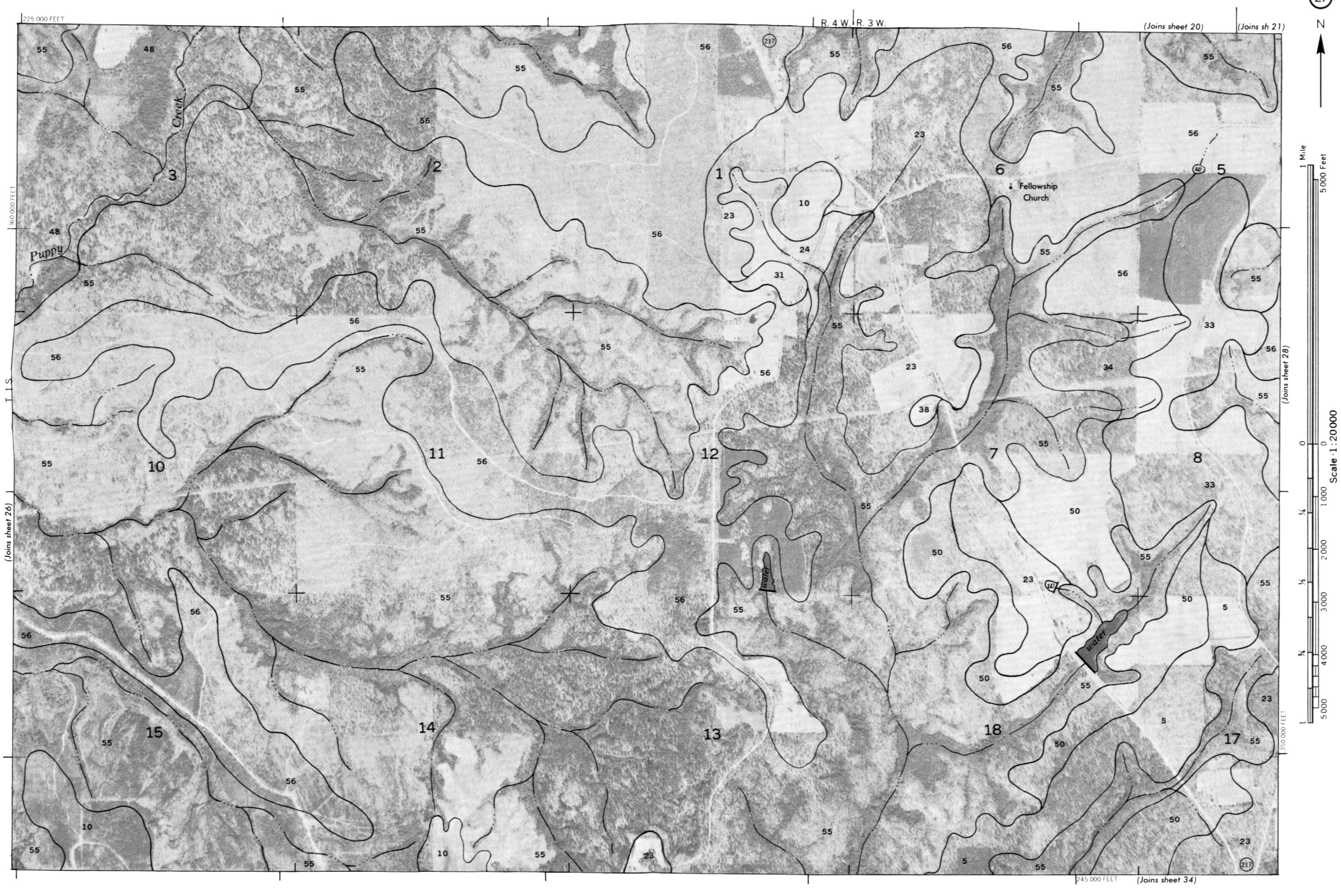

23
N
(Joins sheet 16)
(Joins sheet 22)
(Joins sheet 24)
(Joins sheet 30)
(29)
300 000 FEET
320 000 FEET
375 000 FEET
365 000 FEET
R. 2 W.
R. 1 W.
T. 1 N.
Bull
Branch
Coon
Creek
Bush
Broad
Branch
Boggy
Br.
The
Cave
19
20
21
23
24
25
26
28
29
30
31
32
33
35
36
44
47
55
56
1 Mile
5 000 Feet
Scale 1:20 000

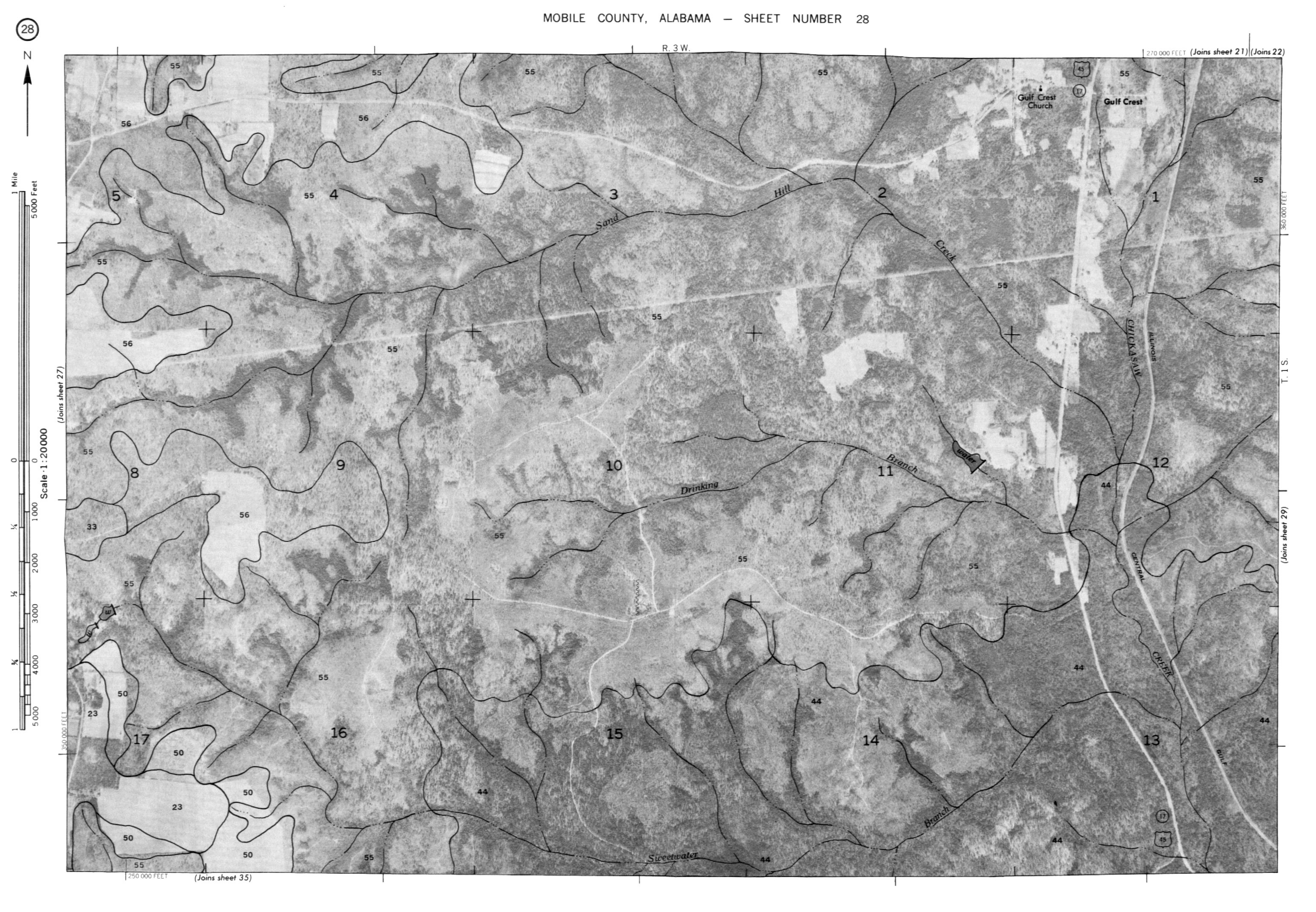

N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 17)
(Joins sheet 23)
(Joins sheet 25)
(Joins sheet 31)
R. 1 W. R. 1 E.
340 000 FEET
375 000 FEET
365 000 FEET
325 000 FEET
T. 1 N.
Chastang
Bucks
MOBILE RIVER
Conrad Creek
Spring Branch
Hall Creek
Grog
Sister Creek
CANAL
ST LOUIS SAN FRANCISCO
SOUTHERN
water
43
13

MOBILE COUNTY, ALABAMA — SHEET NUMBER 25

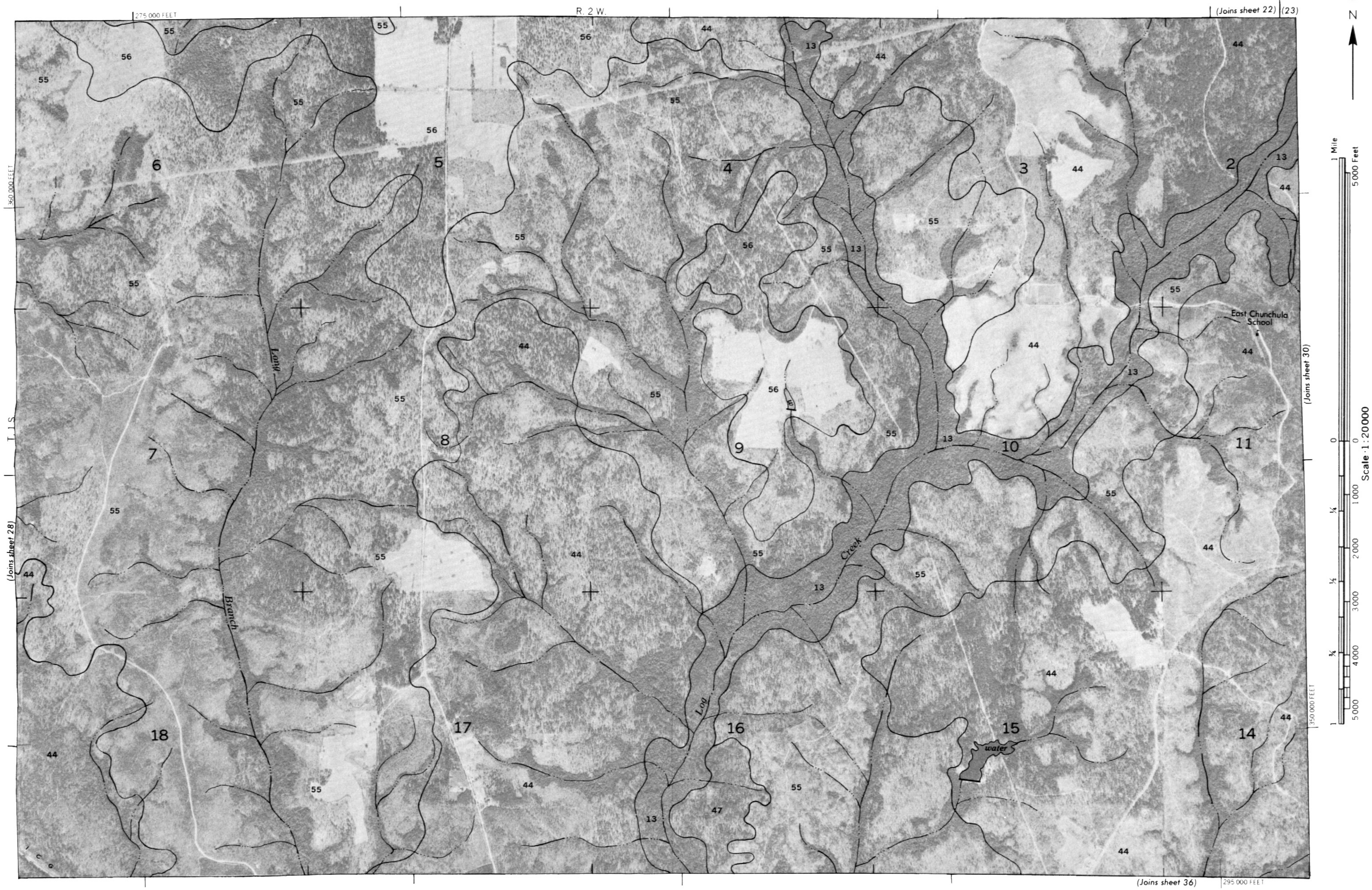

26
N
(Joins sheet 19)
R. 4 W.
220 000 FEET
(Joins sheet 19)
(Joins sheet 20)
360 000 FEET
T. 1 S.
(Joins sheet 27)
(Joins sheet 33)
205 000 FEET
350 000 FEET
MISSISSIPPI
GEORGE
COUNTY
ESCATAWPA
RIVER
Puppy
Creek
1 Mile
5000 Feet
0
Scale 1:20000
1000
2000
3000
4000
5000
¼
½
¾
1
55
56
56
55
48
5
48
6
55
48
4
55
48
37
55
48
48
48
7
55
9
48
8
55
56
55
48
18
48
17
16
55
55
55
55
48
55

MOBILE COUNTY, ALABAMA — SHEET NUMBER 27



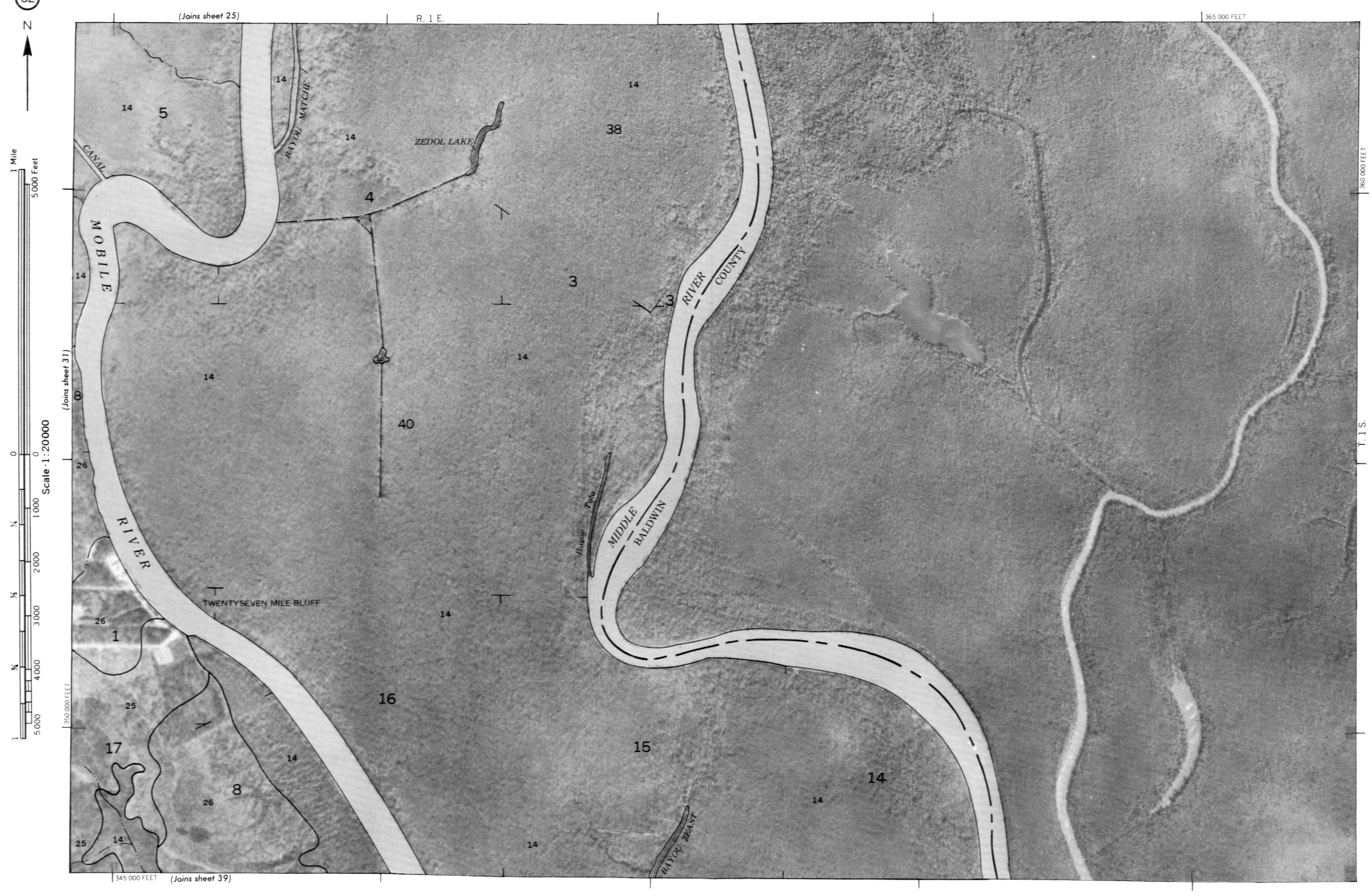

28
N
1 Mile
5000 Feet
Scale 1:20000
R. 3 W.
270 000 FEET
(Joins sheet 21)
(Joins 22)
(Joins sheet 27)
(Joins sheet 29)
(Joins sheet 35)
250 000 FEET
350 000 FEET
360 000 FEET
T. 1 S.
Gulf Crest Church
Gulf Crest
Sand Hill Creek
Drinking Branch
Sweetwater Branch
CHICKASAW CREEK
ILLINOIS CENTRAL GULF
water
1
2
3
4
5
8
9
10
11
12
13
14
15
16
17
55
56
44
50
23
33

MOBILE COUNTY, ALABAMA — SHEET NUMBER 29

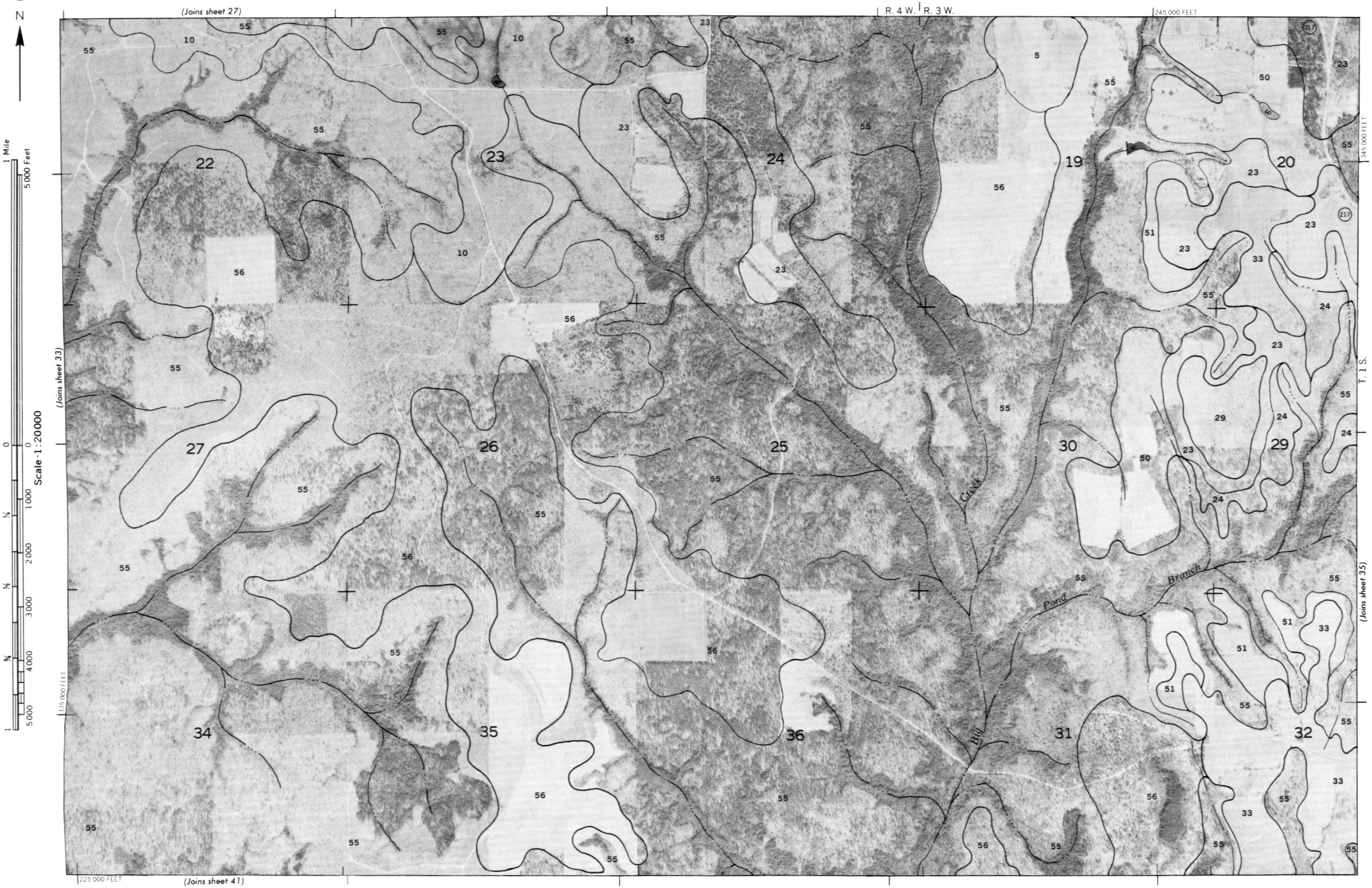



N
(Joins sheet 23)
R. 2 W.
R. 1 W.
320 000 FEET
360 000 FEET
T. 1 S.
(Joins sheet 29)
(Joins sheet 31)
(Joins sheet 37)
300 000 FEET
350 000 FEET
Turnerville Church
Oak Grove School
Turnerville
Cold Creek
BAYOU SARA
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000


31
N
325 000 FEET
R. 1 W.
R. 1 E.
(Joins sheet 24)
360 000 FEET
T. 1 S.
(Joins sheet 30)
(Joins sheet 32)
350 000 FEET
340 000 FEET
(Joins sheet 38)
CANAL
Sister
Creek
Cold
Creek
SAN FRANCISCO
ST. LOUIS
SOUTHERN
Salco
water
w
43
13
1 Mile
5000 Feet
Scale 1:20000
56
55
3
2
26
25
1
6
14
5
7
10
11
12
8
13
18
15
38
17


32
N
(Joins sheet 25)
R. 1 E.
365 000 FEET
360 000 FEET
T. 1 S.
(Joins sheet 31)
350 000 FEET
345 000 FEET
(Joins sheet 39)
1 Mile
5000 Feet
Scale 1:20000
CANAL
MOBILE
RIVER
BAYOU MATCHE
ZEDOL LAKE
TWENTYSEVEN MILE BLUFF
MIDDLE
RIVER
BALDWIN
COUNTY
Bayou Tola
BAYOU ZEAST
14
5
38
4
3
40
8
26
1
25
17
16
15

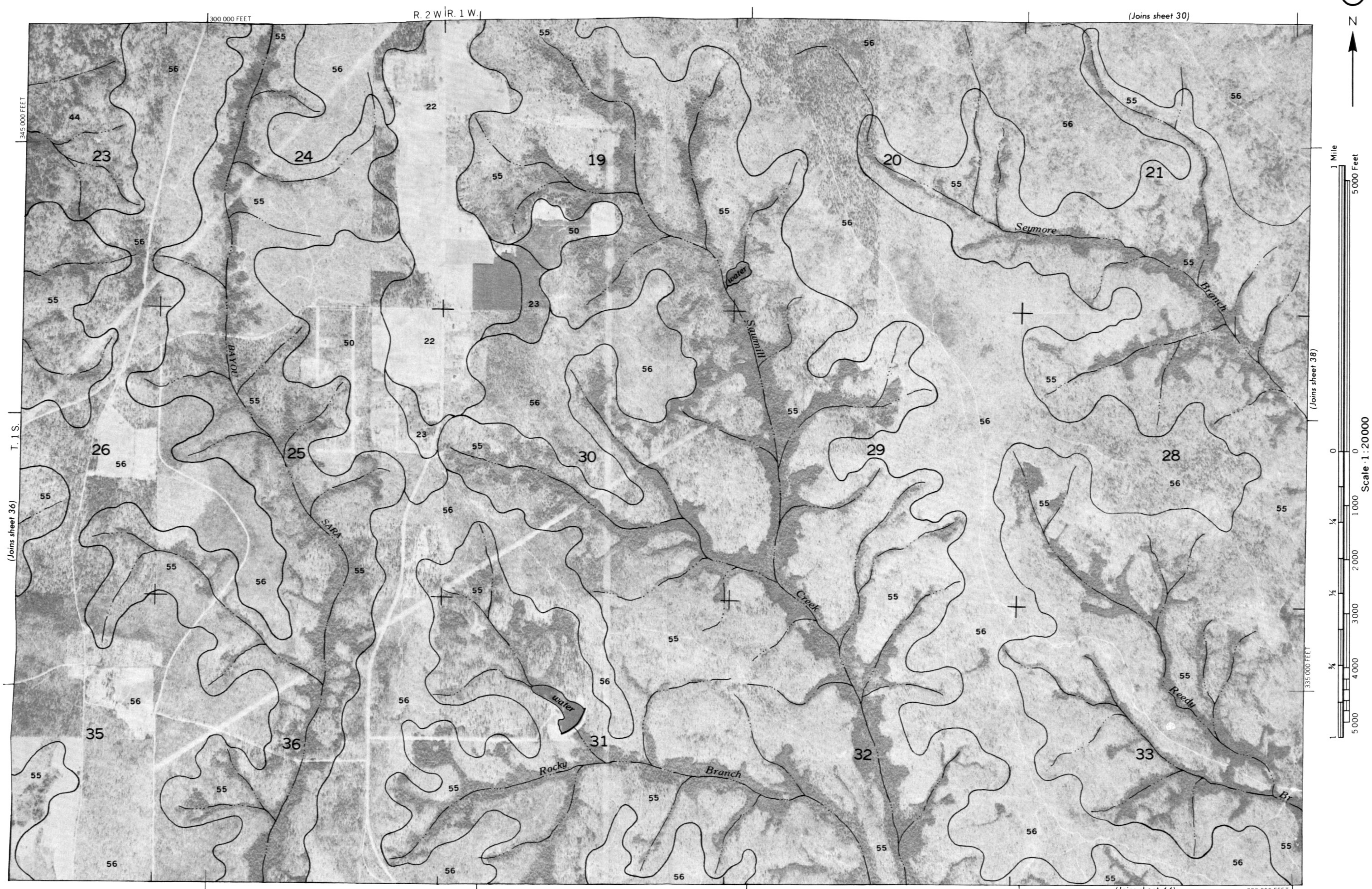

205 000 FEET
R. 4 W.
(Joins sheet 26)
345 000 FEET
T. 1 S.
MISSISSIPPI
COUNTY
GEORGE
ESCATAWPA
RIVER
(Joins sheet 34)
335 000 FEET
220 000 FEET
(Joins sheet 40)
19
20
21
30
29
28
31
32
33
48
55
N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1
Scale 1:20000


N
(Joins sheet 27)
R. 4 W. | R. 3 W.
245 000 FEET
345 000 FEET
(Joins sheet 33)
(Joins sheet 35)
335 000 FEET
225 000 FEET
(Joins sheet 41)
T. 1 S.
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
Creek
Big
Pond
Branch
22
23
24
19
20
27
26
25
30
29
34
35
36
31
32
217


35
N
(Joins sheet 28)
(Joins sheet 34)
(Joins sheet 36)
(Joins sheet 42)
R. 3 W.
T. 1 S.
250 000 FEET
345 000 FEET
335 000 FEET
270 000 FEET
Sweetwater
Branch
Beaver
Pond
Creek
Larkin
Spring
Branch
Pond
Branch
Silver
Creek
Miller
Spring
Branch
Mill
Branch
CHICKASAW CR.
water
GEORGETOWN CEMETERY
Georgetown Church
Church of God
Scale 1:20000
1 Mile
5000 Feet
0
1/4
1/2
3/4
1
1000
2000
3000
4000
5000

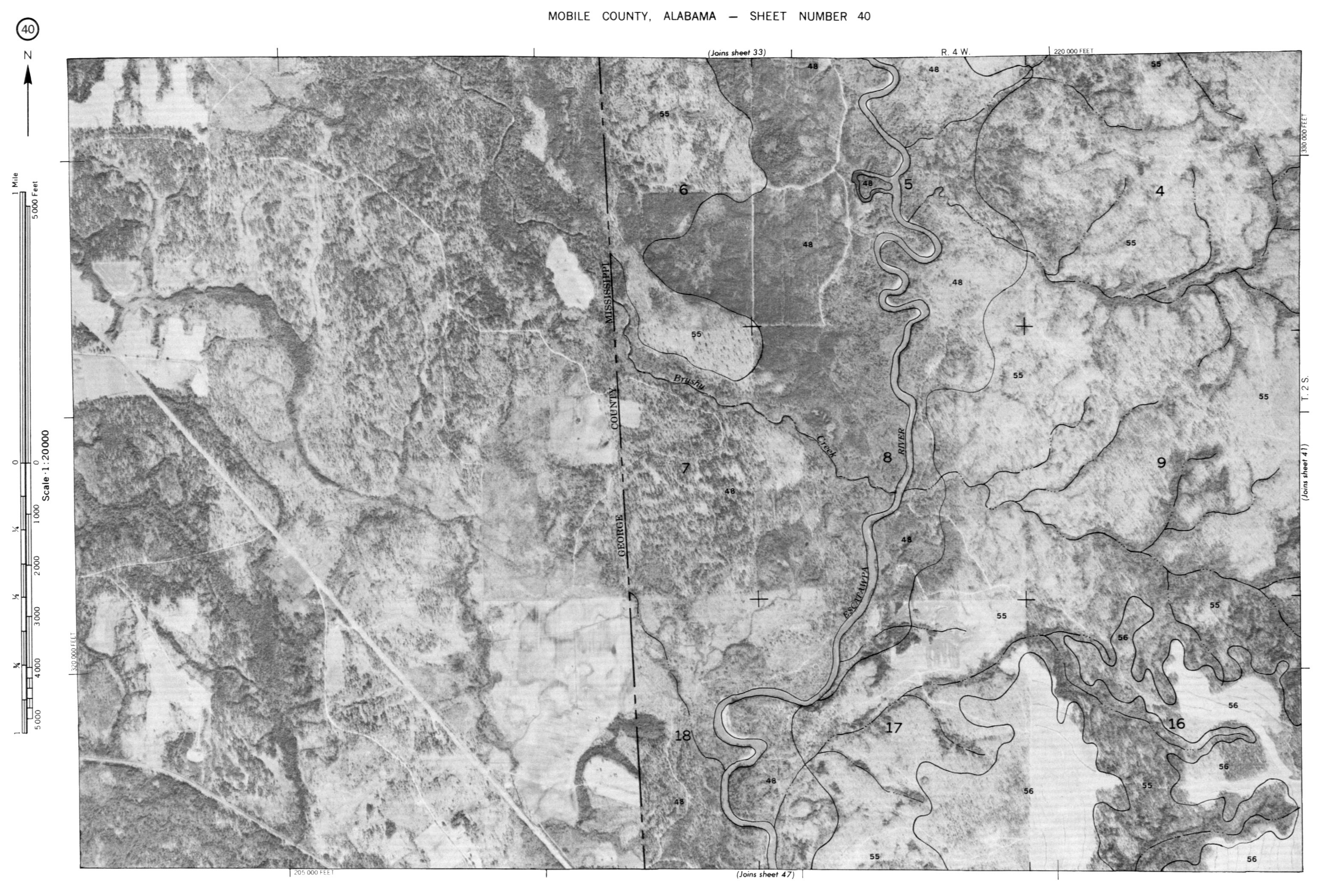

36
N
(Joins sheet 29)
R. 2 W.
295 000 FEET
345 000 FEET
(Joins sheet 35)
(Joins sheet 37)
T. 1 S.
335 000 FEET
275 000 FEET
(Joins sheet 43)
Scale 1:20000
1 Mile
5 000 Feet
0
1000
2000
3000
4000
5000
ILLINOIS
CENTRAL
GULF
Long
Branch
CHICKSAW
CREEK
Creek
Log
Meekers
Starlight
School
Chunchula
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35

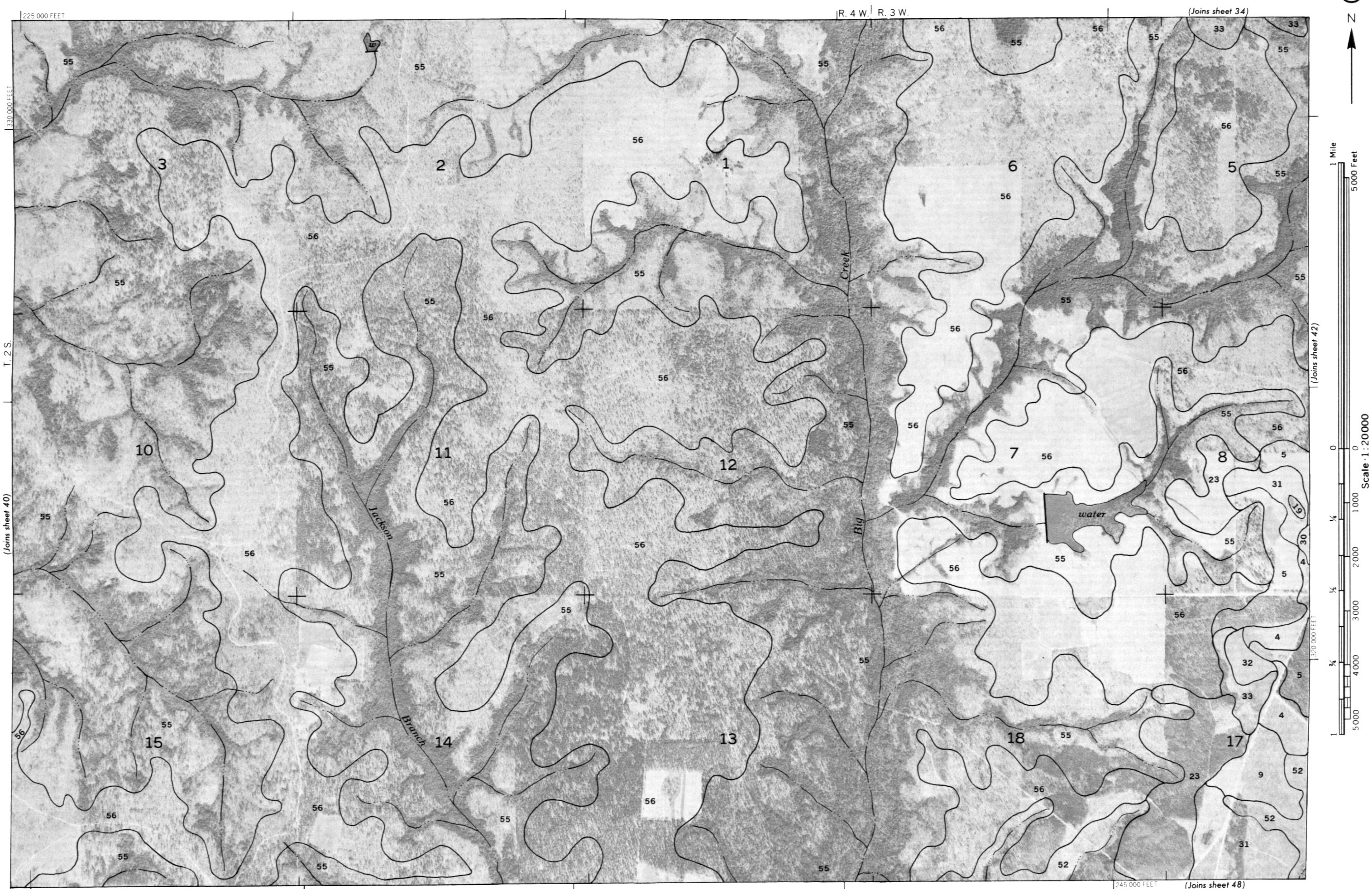
MOBILE COUNTY, ALABAMA — SHEET NUMBER 37

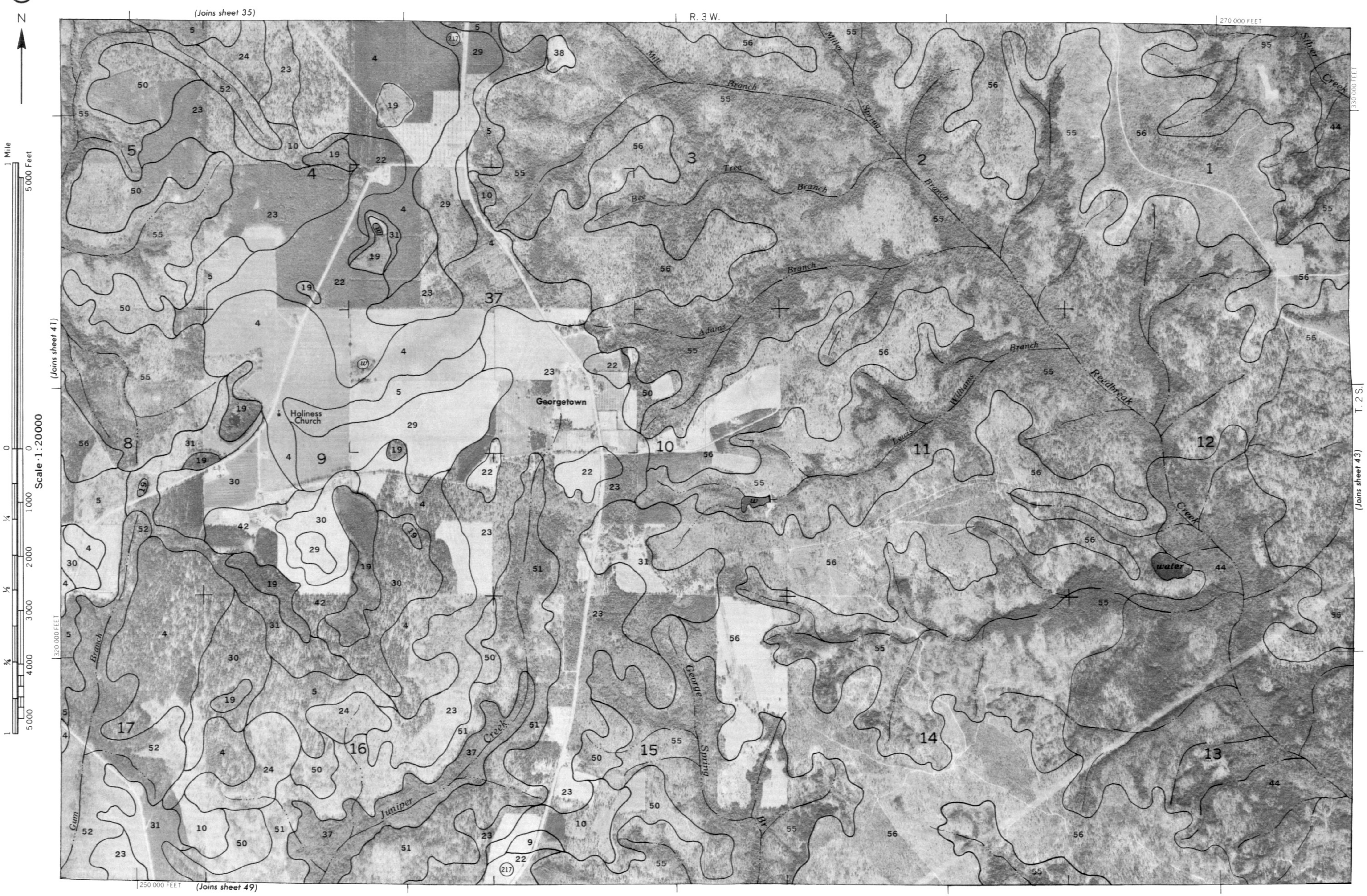


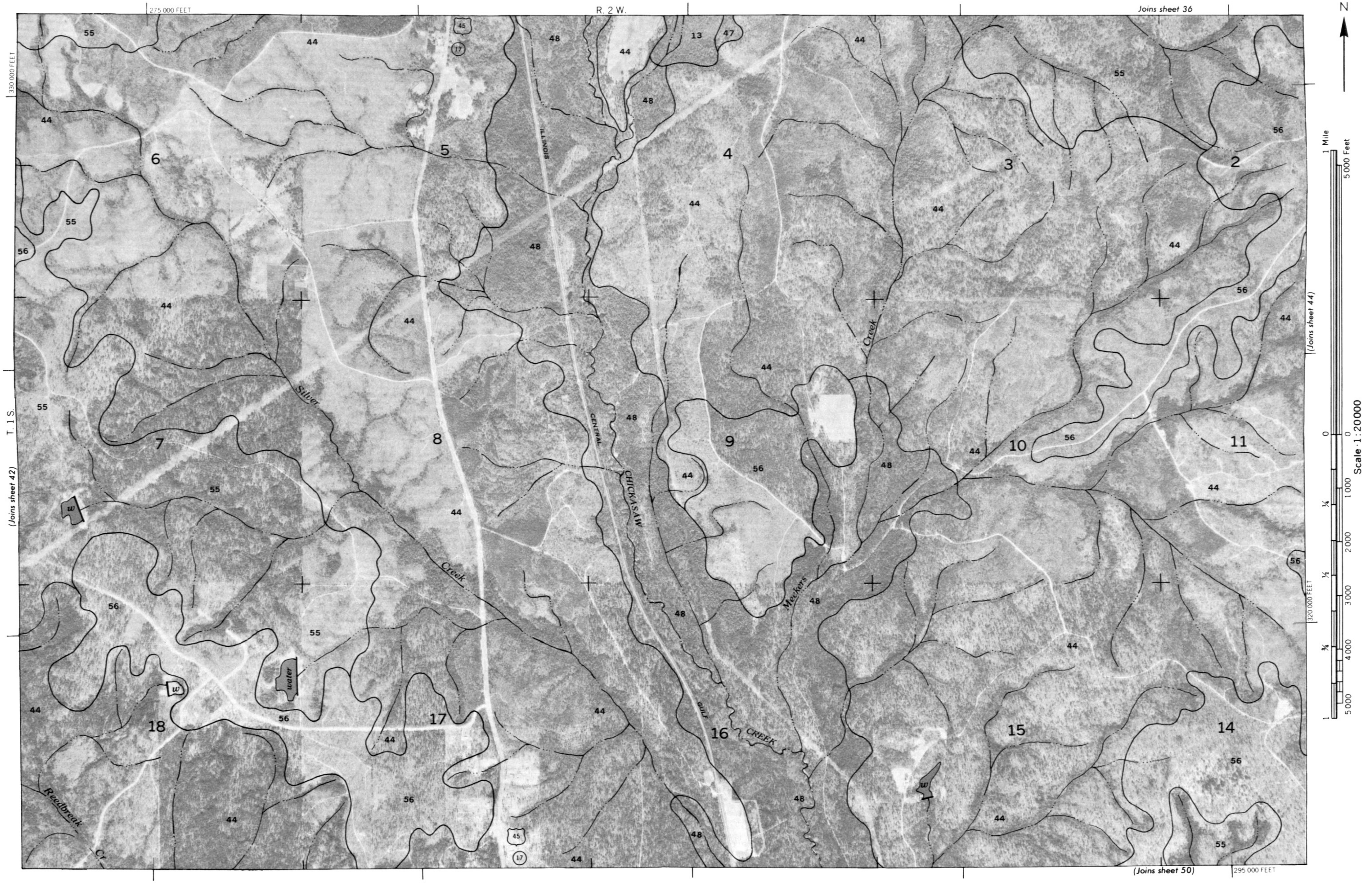

38
N
(Joins sheet 31)
(Joins sheet 37)
(Joins sheet 39)
(Joins sheet 45)
R. 1 W.
R. 1 E.
T. 1 S.
340 000 FEET
345 000 FEET
335 000 FEET
325 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
CANAL
Turtle Branch
ST LOUIS SAN FRANCISCO
SOUTHERN
Axis
Seymore Branch
Jim Bell Br
Sipsey Branch
St. Louis School
HATTERS POND
43
13
22
23
24
19
20
27
26
25
30
29
35
36
31
32
34
55
56


39
N
R. 1 E.
(Joins sheet 32)
345 000 FEET
T. 1 S.
(Joins sheet 38)
(Joins sheet 46)
365 000 FEET
335 000 FEET
TWENTYFOUR MILE BEND
TWENTYONE MILE BLUFF
MOBILE RIVER
BAYOU ZEAST
BALDWIN COUNTY
MIDDLE RIVER
LITTLE LIZARD CREEK
BALDWIN COUNTY
Sipsu Branch
Grompau
Branch
water
water
St. Lukes Church
Scale 1:20 000
1 Mile
5 000 Feet
26
25
14
8
38
21
22
23
20
27
29
28
9
10
32
33
11
42
24

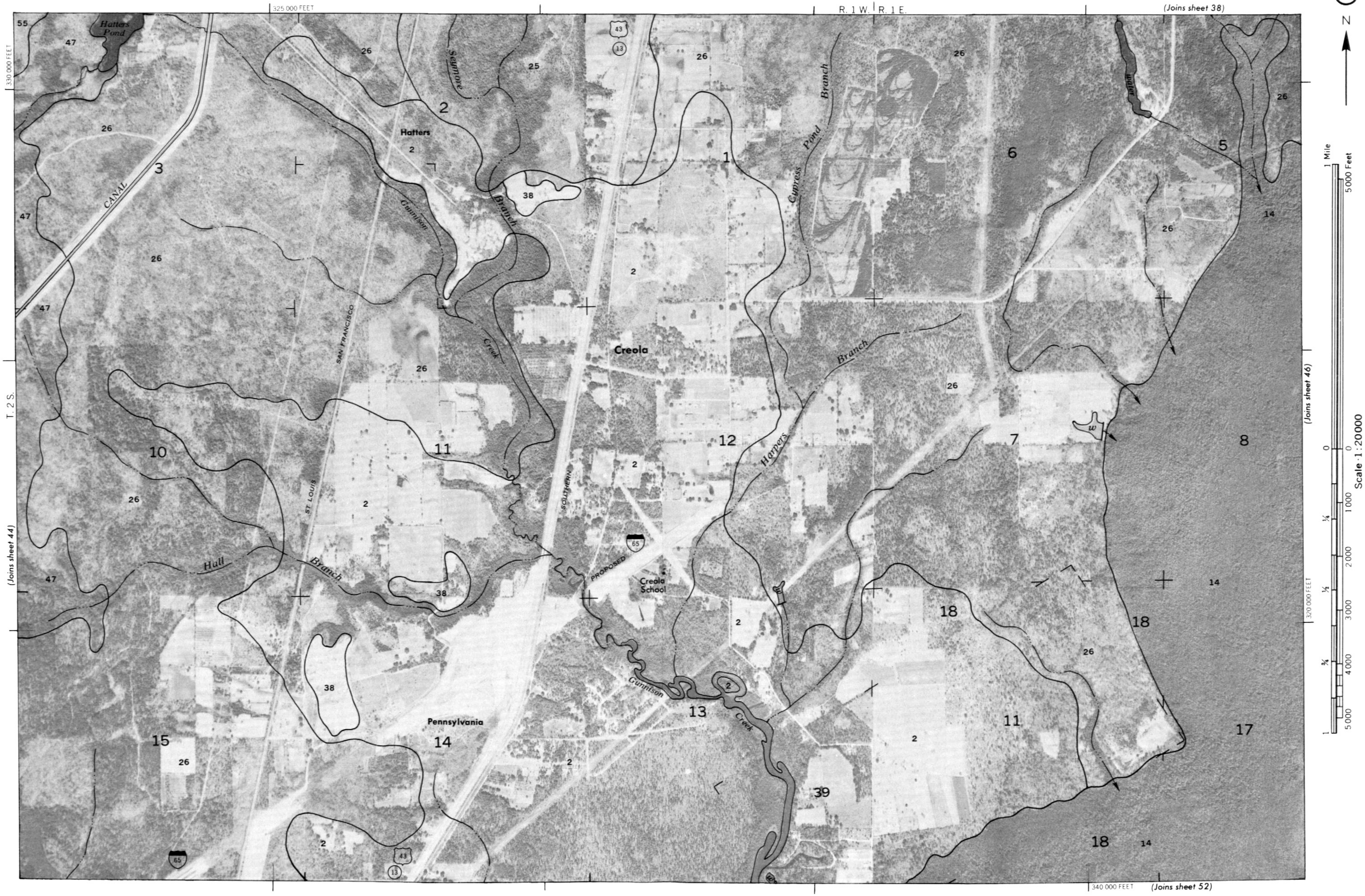

40
N
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
(Joins sheet 33)
R. 4 W.
220 000 FEET
330 000 FEET
T. 2 S.
(Joins sheet 41)
320 000 FEET
205 000 FEET
(Joins sheet 47)
MISSISSIPPI
GEORGE
COUNTY
Brushy
Creek
ESCATAWPA
RIVER
4
5
6
7
8
9
16
17
18
48
55
56


41
N
225 000 FEET
330 000 FEET
R. 4 W.
R. 3 W.
(Joins sheet 34)
(Joins sheet 40)
(Joins sheet 42)
(Joins sheet 48)
T. 2 S.
245 000 FEET
320 000 FEET
Big Creek
Jackson Branch
water
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000
1
2
3
5
6
7
8
10
11
12
13
14
15
17
18
55
56
4
5
9
19
23
30
31
32
33
52

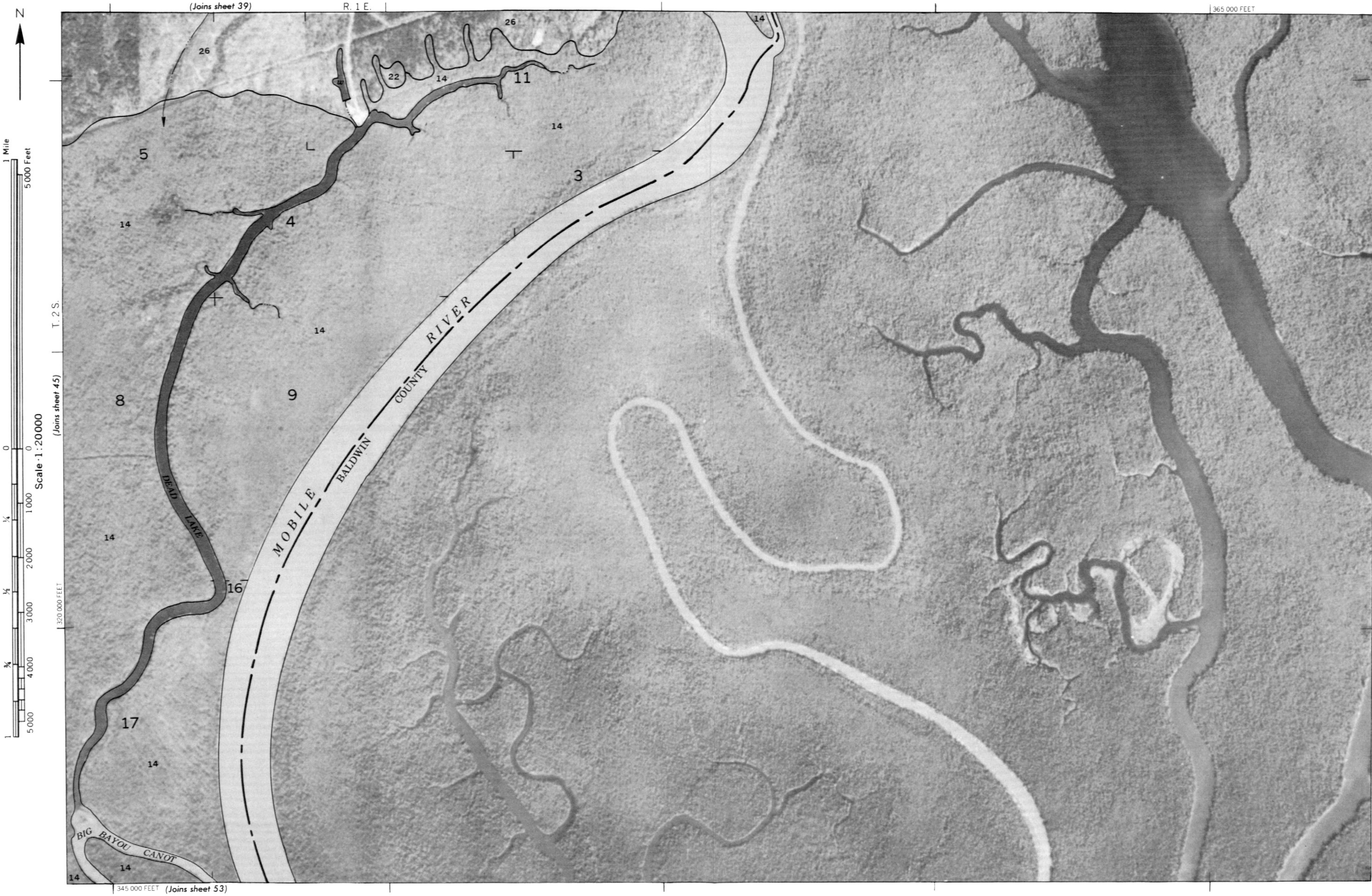

N
(Joins sheet 35)
R. 3 W.
270 000 FEET
330 000 FEET
(Joins sheet 41)
(Joins sheet 43)
T. 2 S.
320 000 FEET
250 000 FEET
(Joins sheet 49)
Scale 1:20000
1 Mile
5000 Feet
Georgetown
Holiness Church
Mill Branch
Miller Spring Branch
Silver Creek
Bee Tree Branch
Adams Branch
Lewis Williams Branch
Reedbreak Creek
George Spring Br
Juniper Creek
Gum Branch
water

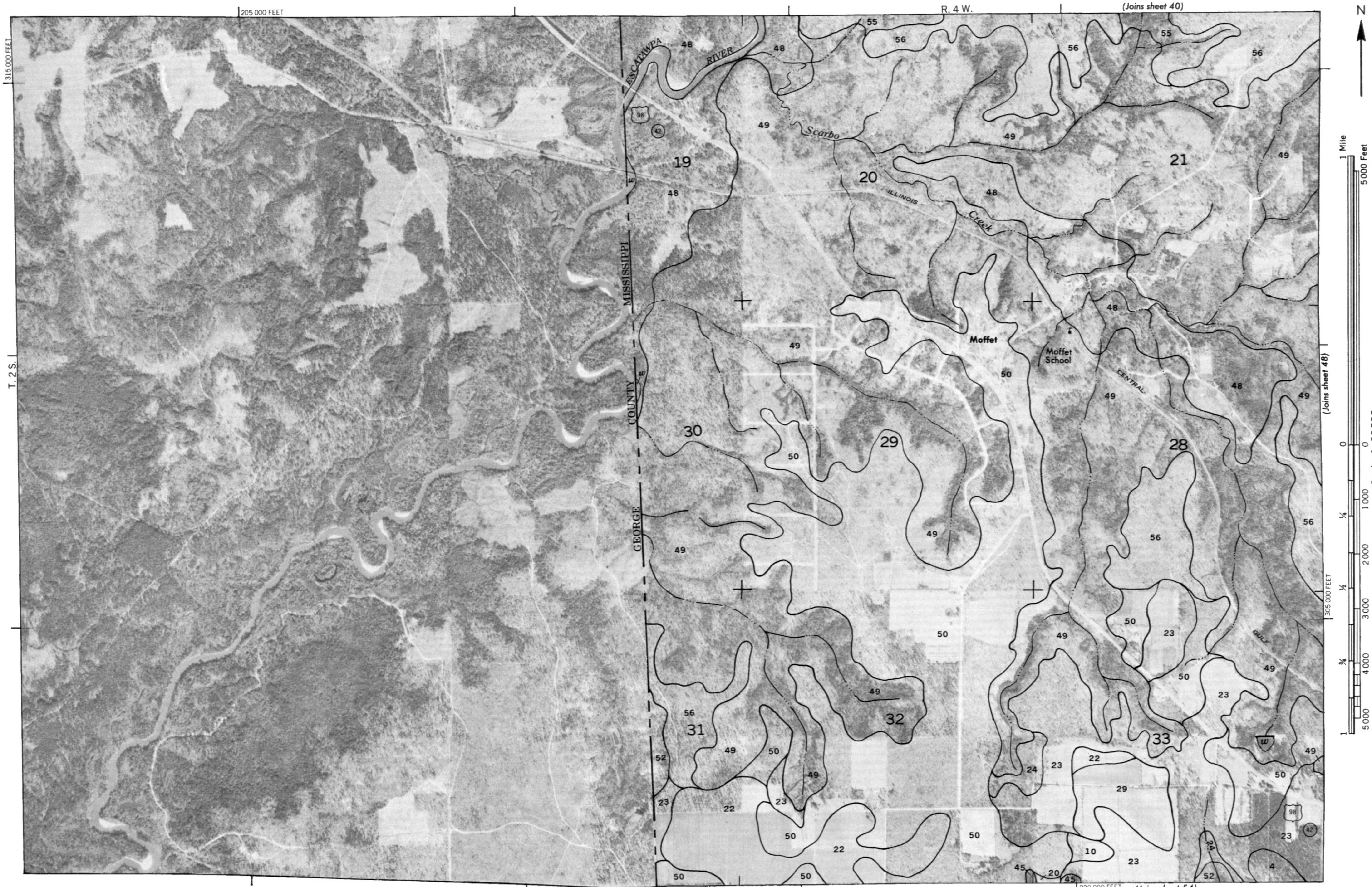

275 000 FEET
R. 2 W.
Joins sheet 36
330 000 FEET
T. 1 S.
(Joins sheet 42)
(Joins sheet 44)
(Joins sheet 50)
320 000 FEET
295 000 FEET
ILLINOIS
CENTRAL
GULF
CHICKASAW
CREEK
Silver
Creek
Meekers
Creek
Reedbreak
Cr
water
N
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000

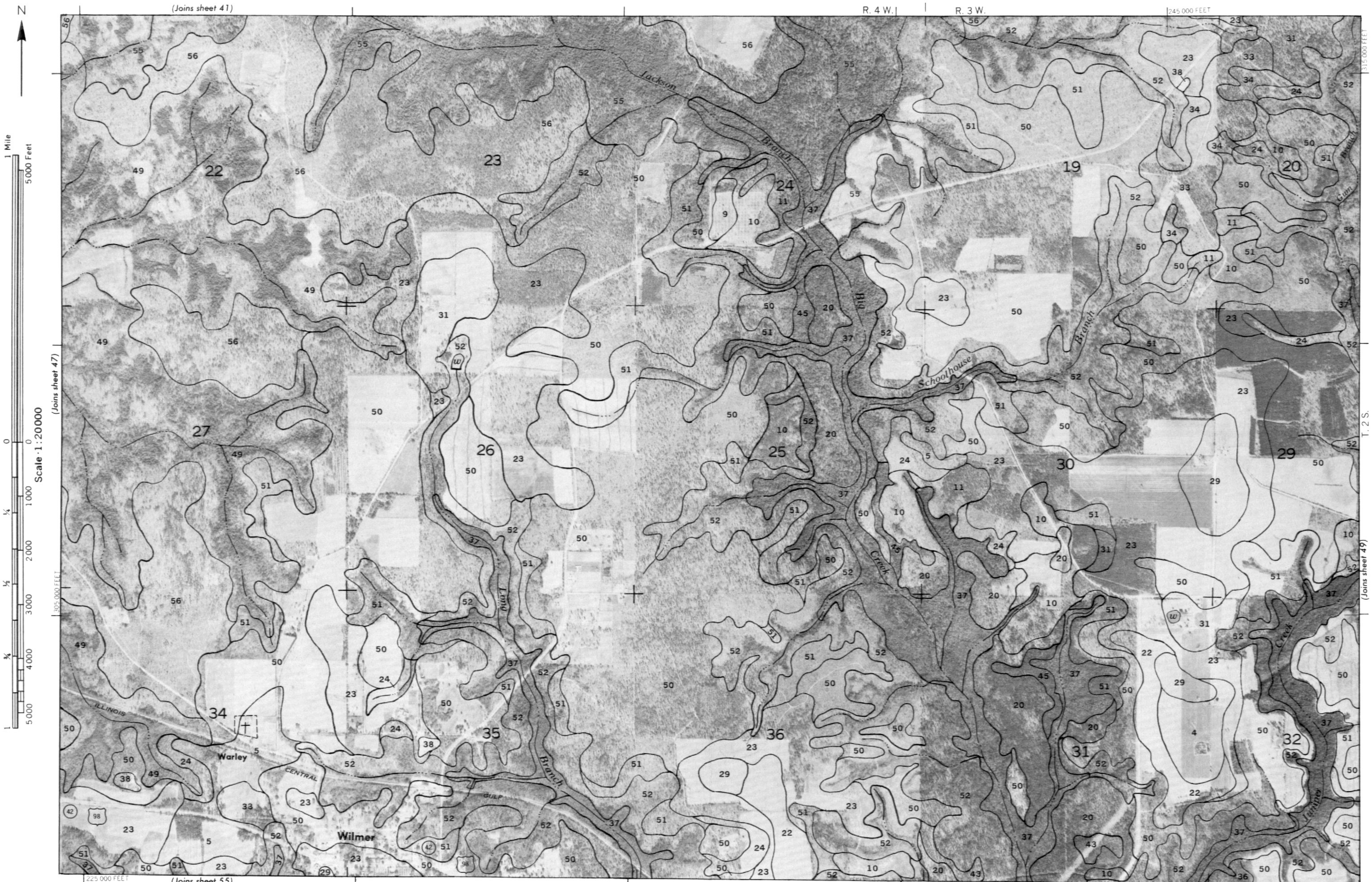
44
N
(Joins sheet 37)
R. 2 W. | R. 1 W.
320 000 FEET
330 000 FEET
T. 2 S.
(Joins sheet 43)
(Joins sheet 45)
(Joins sheet 51)
300 000 FEET
320 000 FEET
Scale 1:20000
1 Mile
5000 Feet
BAYOU
SARA
Halls
Swamp
Branch
Sawmill
Creek
Indian
Fork
Branch
CANAL

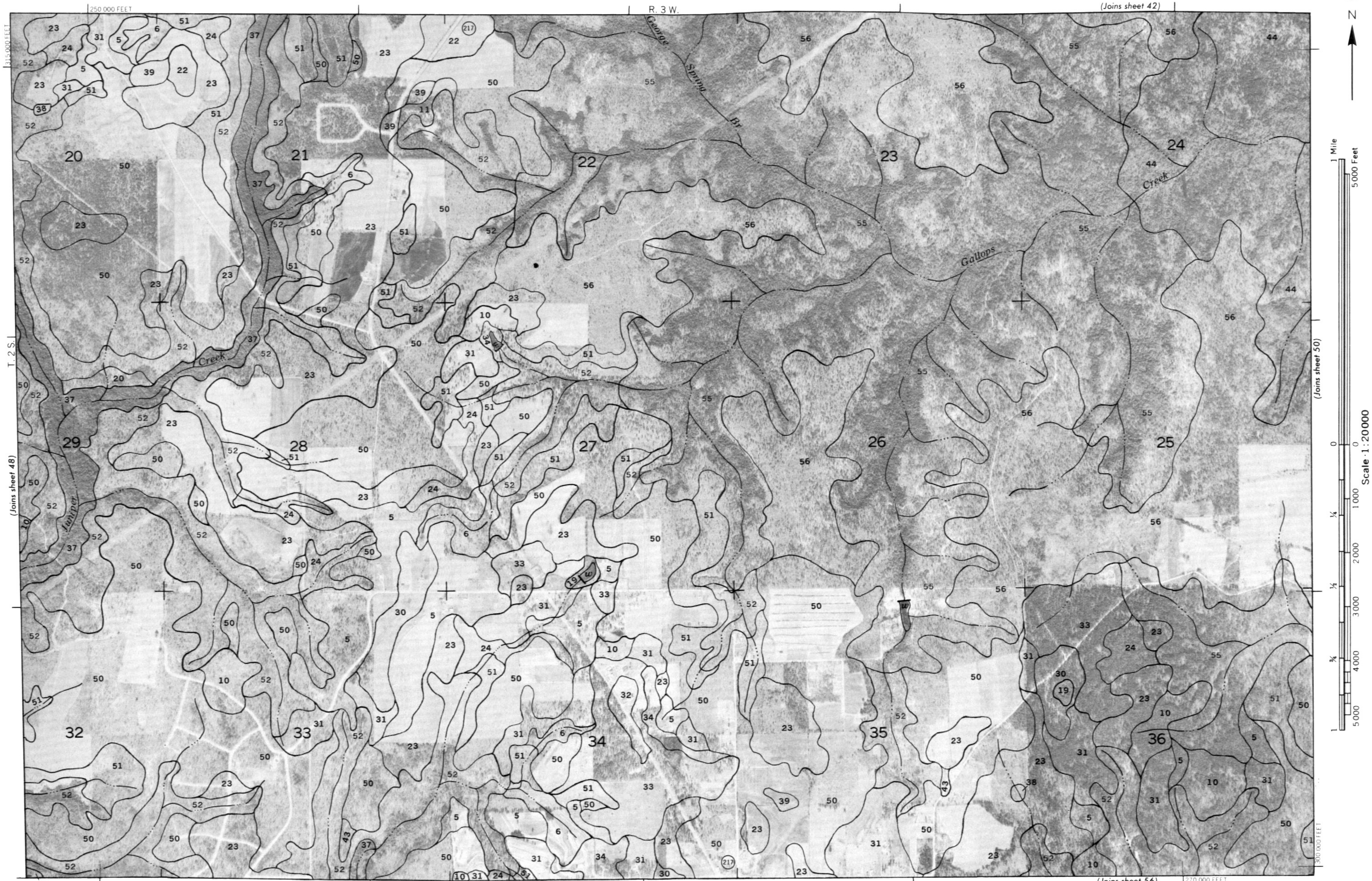

325 000 FEET
R. 1 W. | R. 1 E.
(Joins sheet 38)
330 000 FEET
Hatters Pond
Seymore
Hatters
CANAL
Gunnison
Branch
Creek
Cypress Pond Branch
water
Creola
SAN FRANCISCO
ST LOUIS
SOUTHERN
Harpers
Branch
Hall
Branch
PROPOSED
Creola School
Gunnison
Creek
Pennsylvania
T. 2 S.
(Joins sheet 44)
(Joins sheet 46)
320 000 FEET
340 000 FEET
(Joins sheet 52)
N
1 Mile
5000 Feet
Scale 1:20000
43
13
65

MOBILE COUNTY, ALABAMA — SHEET NUMBER 46

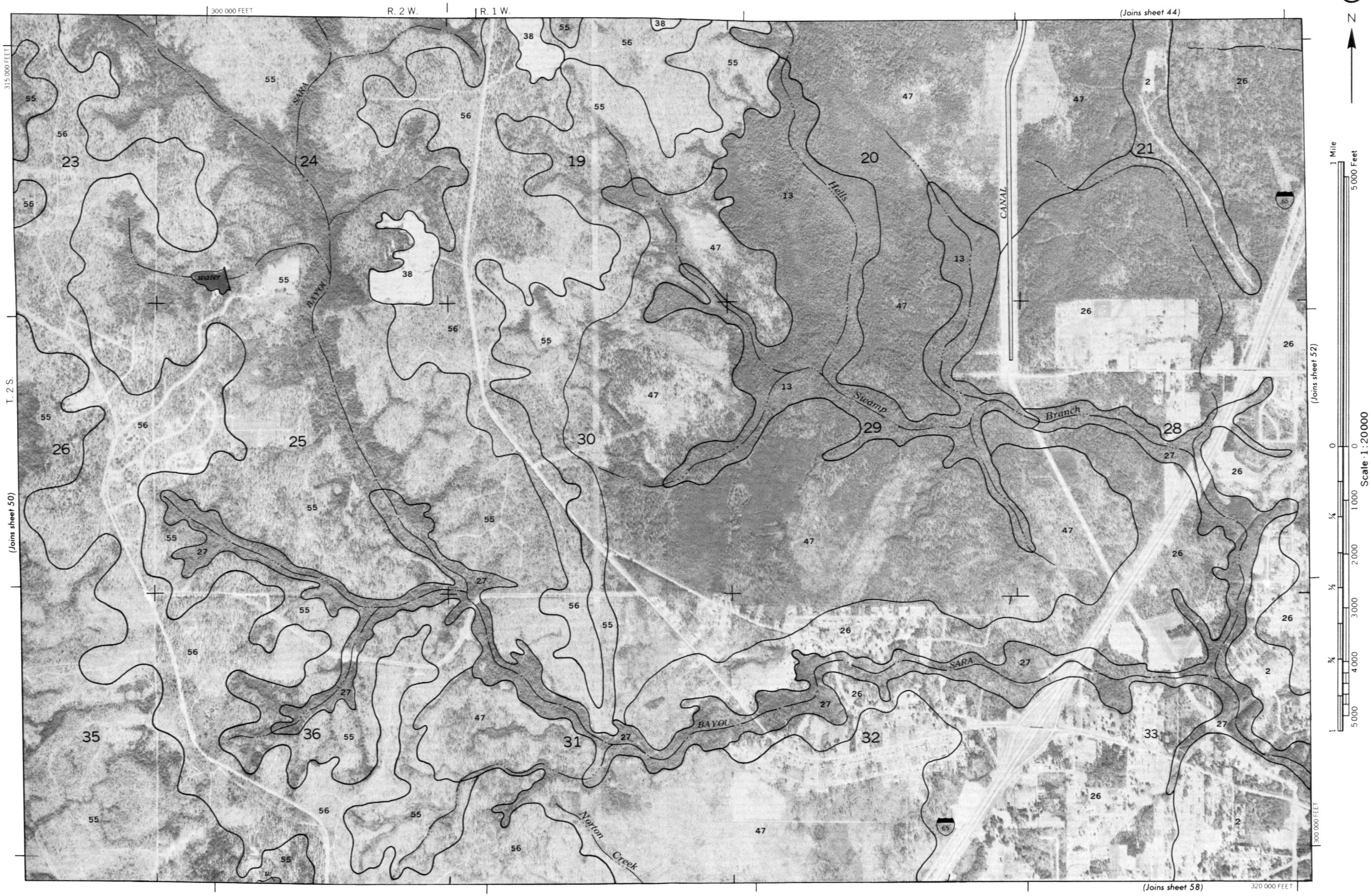


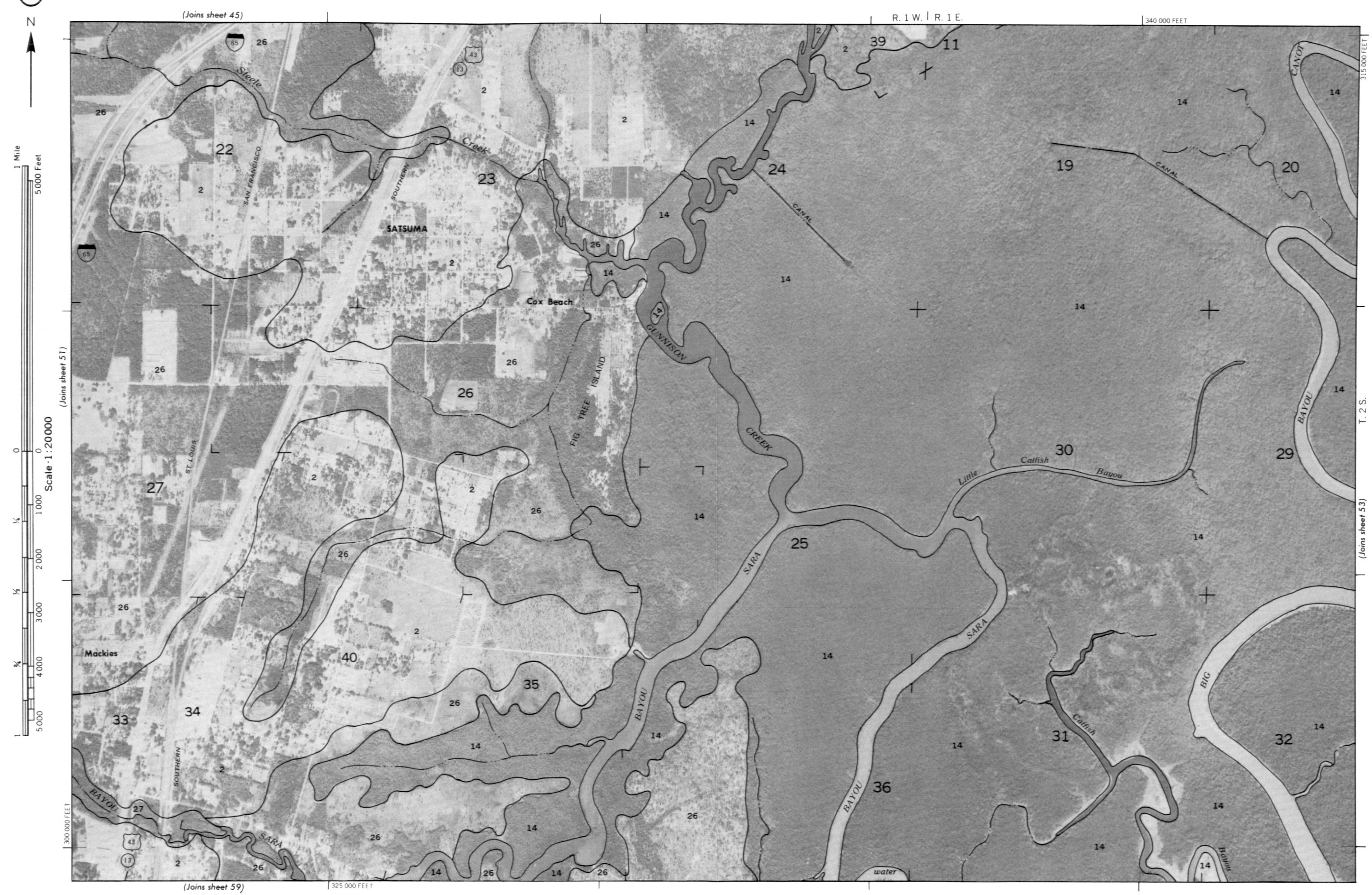

47
N
(Joins sheet 40)
R. 4 W.
205 000 FEET
315 000 FEET
T. 2 S.
ESCATAWPA
RIVER
Scarbo
ILLINOIS
Creek
MISSISSIPPI
COUNTY
GEORGE
Moffet
Moffet School
CENTRAL
GULF
(Joins sheet 48)
305 000 FEET
220 000 FEET
(Joins sheet 54)
1 Mile
5000 Feet
Scale 1:20000
19
20
21
28
29
30
31
32
33

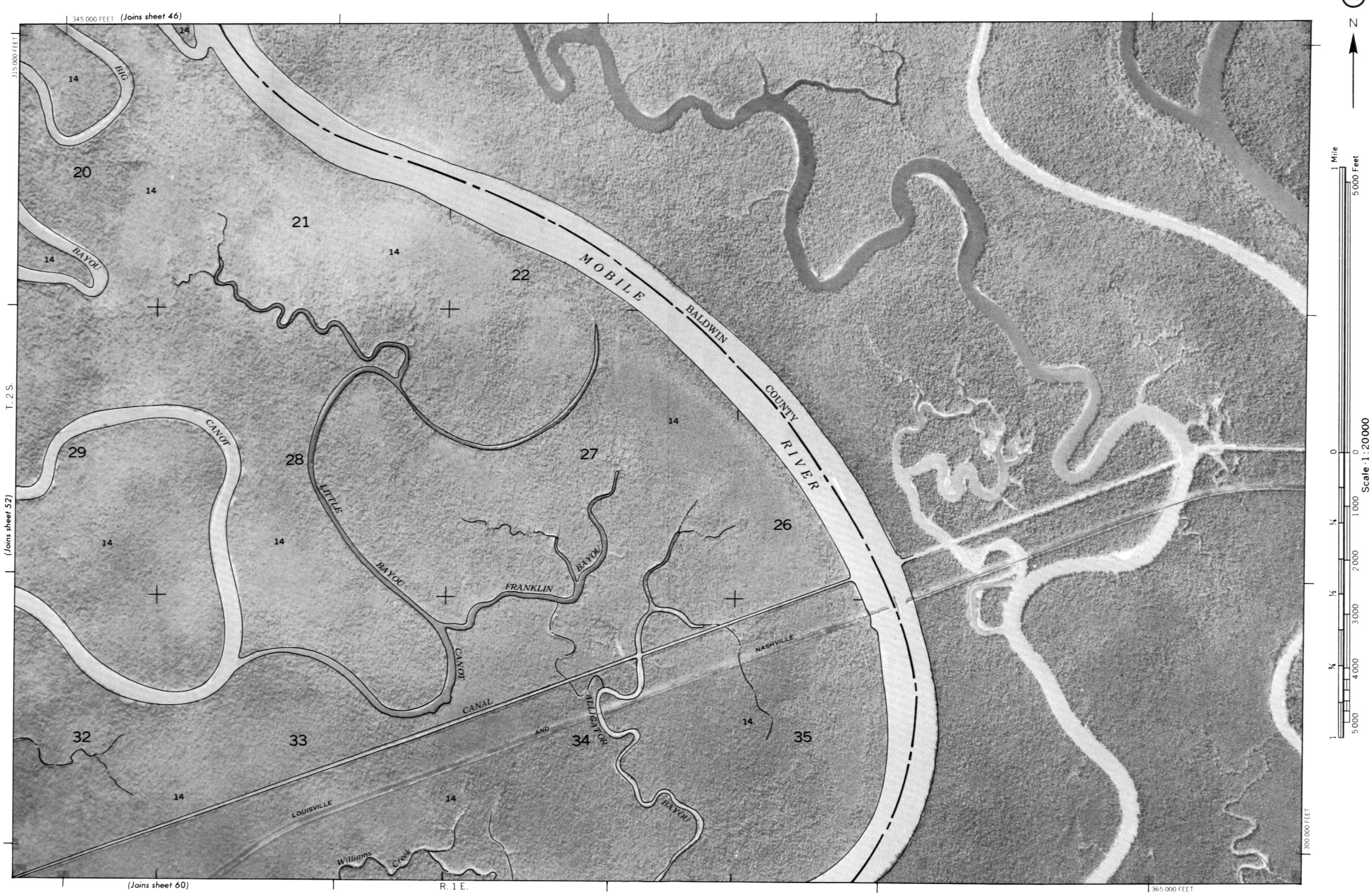

N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 41)
(Joins sheet 47)
(Joins sheet 49)
(Joins sheet 55)
R. 4 W.
R. 3 W.
T. 2 S.
245 000 FEET
315 000 FEET
305 000 FEET
225 000 FEET
Jackson
Branch
Big
Creek
Schoolhouse
Branch
Long
Branch
Gum
Branch
Creek
Jumper
ILLINOIS
CENTRAL
GULF
Warley
Wilmer


250 000 FEET
R. 3 W.
(Joins sheet 42)
N
315 000 FEET
T. 2 S.
(Joins sheet 48)
(Joins sheet 50)
(Joins sheet 56)
270 000 FEET
300 000 FEET
George Spring Br
Gallops Creek
Creek
Juniper Creek
217
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
1 Mile
5000 Feet
Scale 1:20000


50
N
(Joins sheet 43)
R. 2 W.
295 000 FEET
315 000 FEET
(Joins sheet 49)
(Joins sheet 51)
(Joins sheet 57)
T. 2 S.
300 000 FEET
275 000 FEET
Scale 1:20000
1 Mile
5000 Feet
Reedbreak Creek
Gallops Creek
Williams Creek
Silver Creek
Coon Creek
Chickasaw Creek
Magee Creek
HAAS LAKE
Smithtown
Mt. Pilgrim Church
Oak Grove
Mauvilla
MAUVILLA CEMETERY
Mt Olive Church
ILLINOIS
CENTRAL
GULF
water
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35
44
48
56
55
13
38
50
51

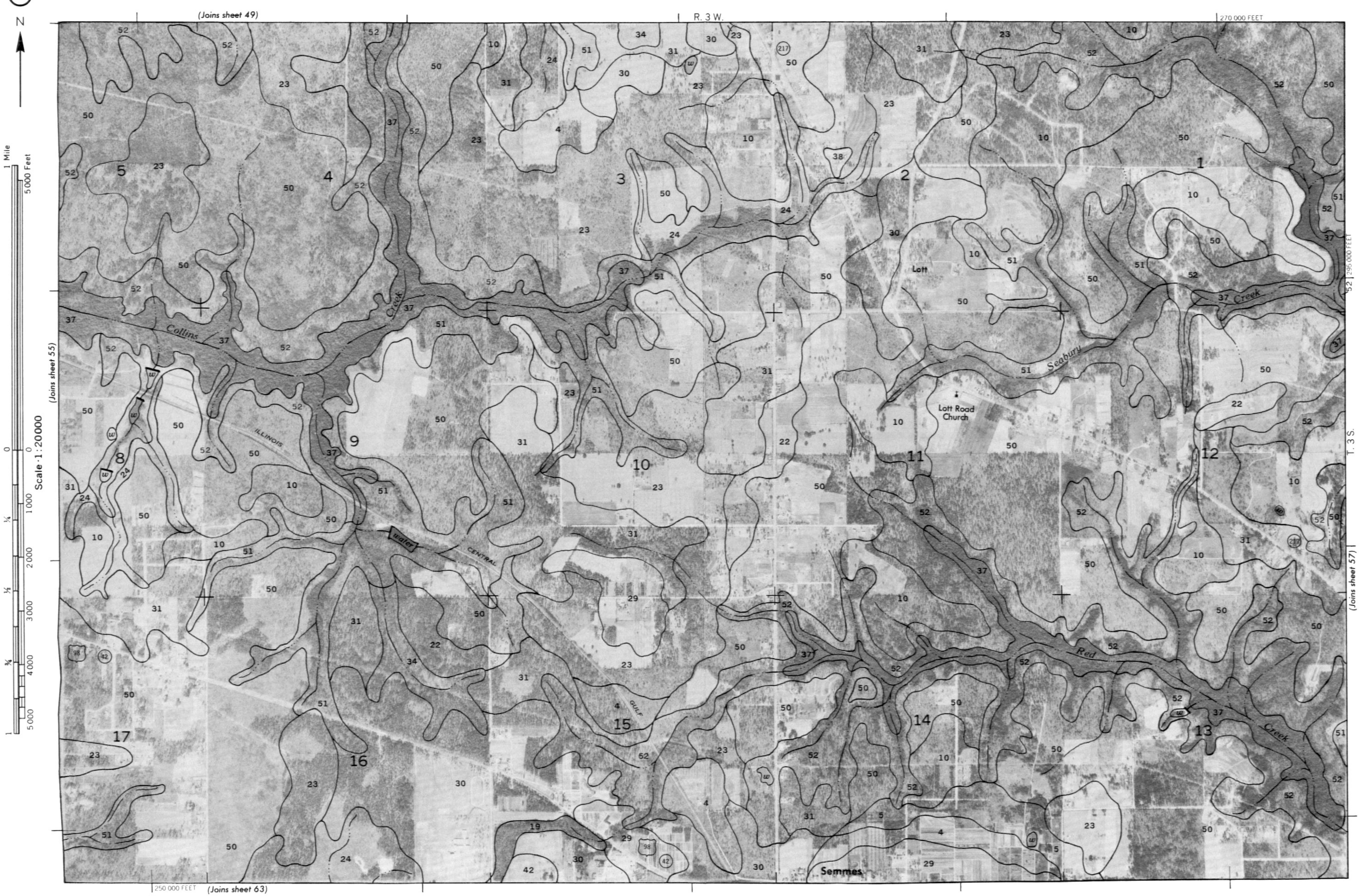

300 000 FEET
R. 2 W.
R. 1 W.
(Joins sheet 44)
315 000 FEET
T. 2 S.
(Joins sheet 50)
(Joins sheet 52)
(Joins sheet 58)
300 000 FEET
320 000 FEET
SARA
BAYOU
Hells
Swamp
Branch
CANAL
Norton
Creek
water
65
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1


52
N
(Joins sheet 45)
(Joins sheet 51)
(Joins sheet 53)
(Joins sheet 59)
R. 1 W. | R. 1 E.
T. 2 S.
340 000 FEET
315 000 FEET
300 000 FEET
325 000 FEET
Scale 1:20000
1 Mile
5000 Feet
SATSUMA
Cox Beach
Mackies
Steele Creek
SAN FRANCISCO
SOUTHERN
ST LOUIS
FIG TREE ISLAND
GUNNISON CREEK
CANAL
CANOT
BAYOU
Little Catfish Bayou
BAYOU SARA
BIG BAYOU
Catfish
water
22
23
24
25
27
29
30
31
32
33
34
35
36
39
40
11
19
20

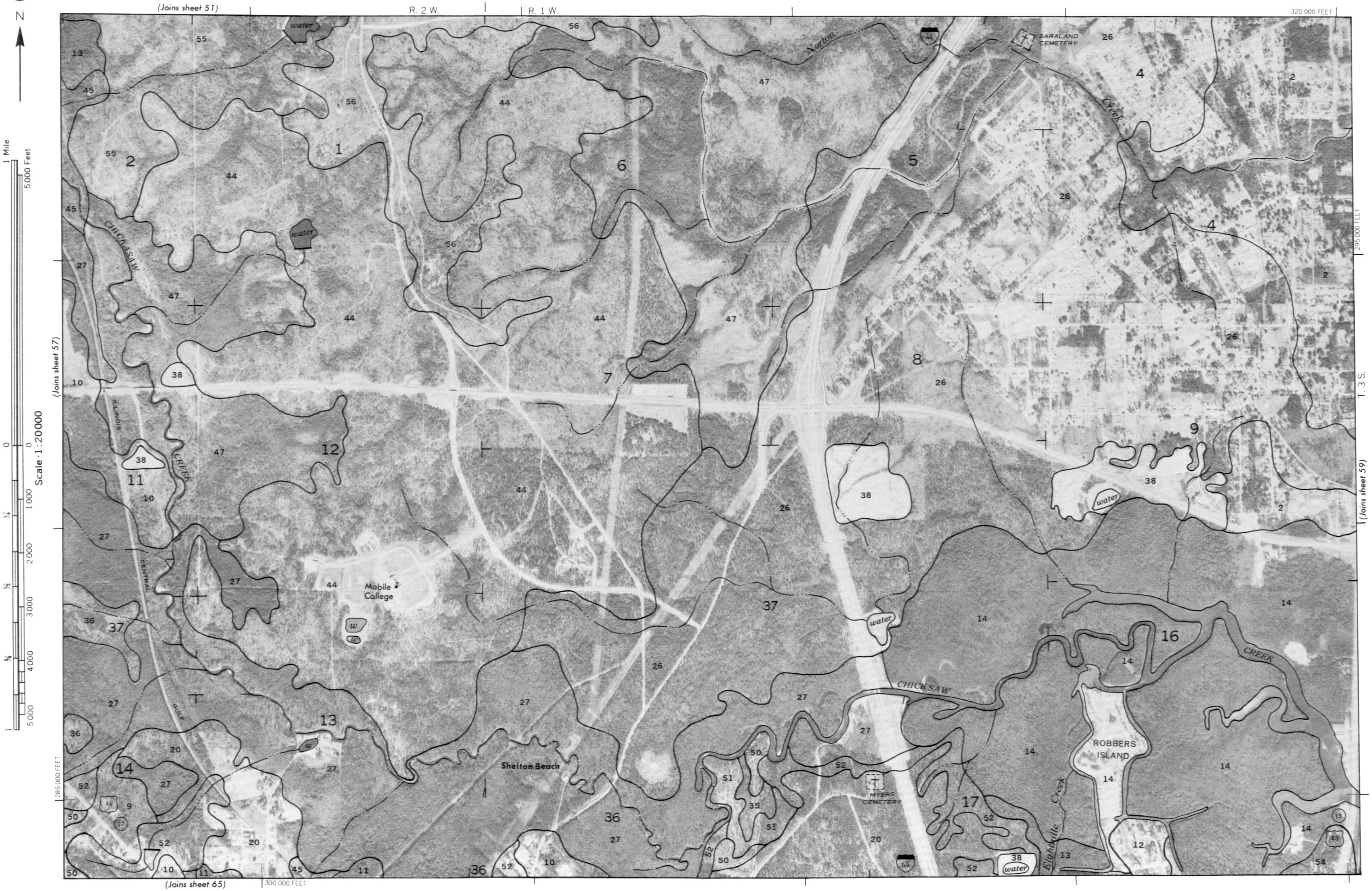

53
N
345 000 FEET
(Joins sheet 46)
315 000 FEET
BIG
BAYOU
MOBILE
BALDWIN
COUNTY
RIVER
CANOT
LITTLE
BAYOU
CANOT
FRANKLIN
BAYOU
CANAL
AND
ALLIGATOR
BAYOU
NASHVILLE
LOUISVILLE
Williams
Creek
20
21
22
26
27
28
29
32
33
34
35
14
T. 2 S.
(Joins sheet 52)
(Joins sheet 60)
R. 1 E.
300 000 FEET
365 000 FEET
1 Mile
5000 Feet
Scale 1:20000


54
N
1 Mile
5 000 Feet
Scale 1:20000
(Joins sheet 47)
R. 4 W.
220 000 FEET
300 000 FEET
T. 3 S.
(Joins sheet 55)
(Joins sheet 61)
205 000 FEET
285 000 FEET
MISSISSIPPI
GEORGE COUNTY
Creek
Flat


225 000 FEET
400 000 FEET
R. 4 W.
R. 3 W.
(Joins sheet 48)
N
T. 3 S.
(Joins sheet 54)
(Joins sheet 56)
(Joins sheet 62)
245 000 FEET
285 000 FEET
Juniper Creek
Big Creek
Collins Creek
Long Branch
Bogue
Branch
BIG CREEK LAKE
Crooked Creek
Fairview
Palestine Church
water
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1000
2000
3000
4000
5000

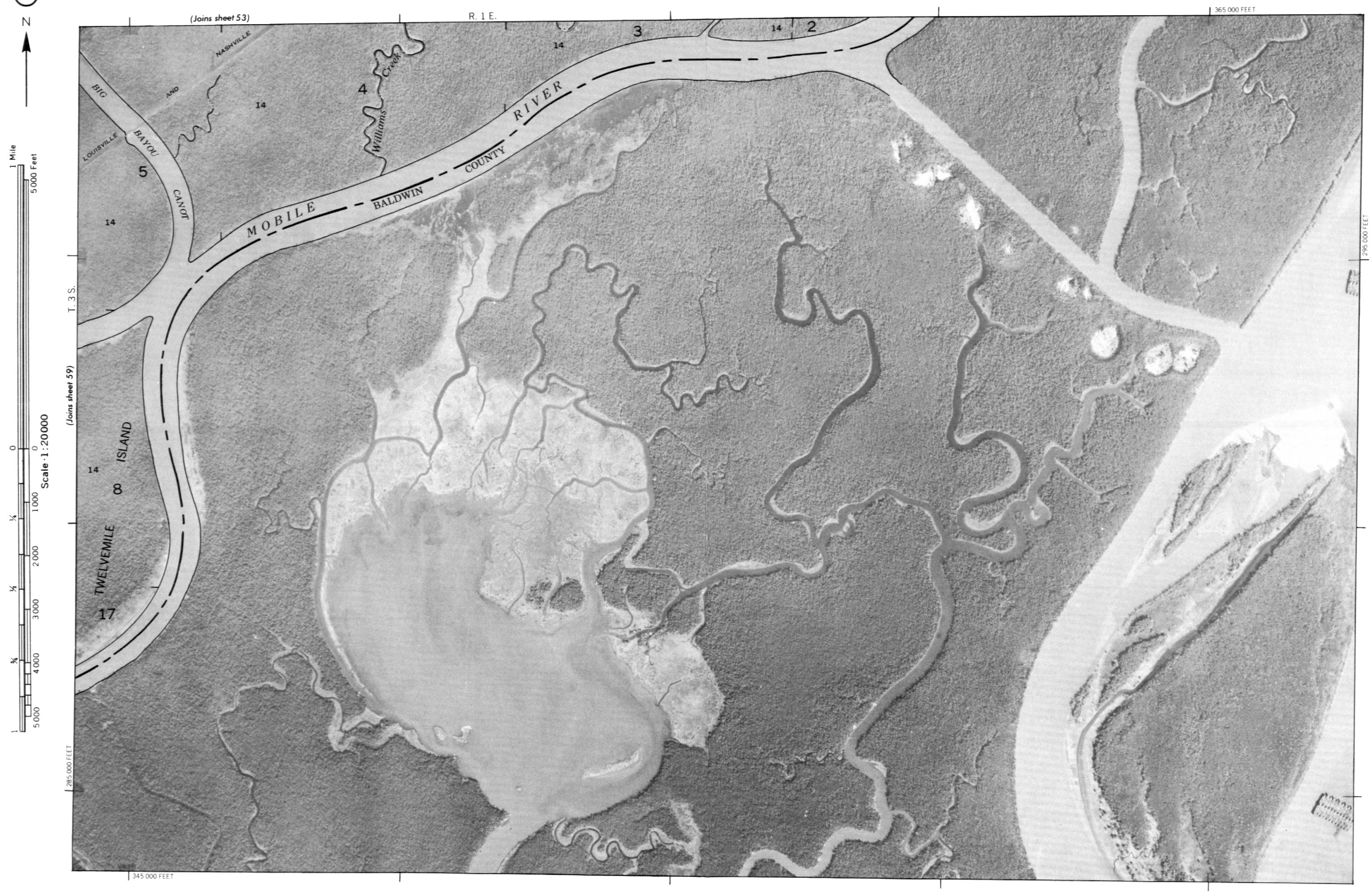

56
N
(Joins sheet 49)
R. 3 W.
270 000 FEET
295 000 FEET
T. 3 S.
(Joins sheet 57)
(Joins sheet 55)
(Joins sheet 63)
250 000 FEET
Scale 1:20000
1 Mile
5000 Feet
Collins Creek
Seabury Creek
Red Creek
Lott
Lott Road Church
ILLINOIS CENTRAL GULF
water
Semmes


57
N
275 000 FEET
R. 2 W.
(Joins sheet 50)
(Joins sheet 56)
(Joins sheet 58)
(Joins sheet 64)
295 000 FEET
285 000 FEET
T. 3 S.
Magee Creek
Seabury Creek
St. Johns Chapel
Kushla
CHICKASAW CREEK
ILLINOIS CENTRAL GULF
water
INDIANS SPRINGS CEMETERY
1 Mile
5000 Feet
Scale 1:20000


N
(Joins sheet 51)
R. 2 W.
R. 1 W.
320 000 FEET
SARALAND CEMETERY
Norton
Creek
CHICKASAW
CREEK
ILLINOIS
CENTRAL
GULF
Mobile College
water
T. 3 S.
295 000 FEET
(Joins sheet 57)
(Joins sheet 59)
Scale 1:20000
1 Mile
5000 Feet
Shelton Beach
MYERS CEMETERY
ROBBERS ISLAND
Eightmile Creek
285 000 FEET
300 000 FEET
(Joins sheet 65)


59
N
(Joins sheet 52)
R. 1 W. R. 1 E.
325 000 FEET
295 000 FEET
285 000 FEET
340 000 FEET
T. 3 S.
(Joins sheet 58)
(Joins sheet 60)
(Joins sheet 66)
SARALAND
water
38
SAN FRANCISCO
SOUTHERN
ST. LOUIS
BAYOU
SARA
CANAL
Bayou
Hickory
SARA
BAYOU
Nenemoosha
Catfish
Bayou
NASHVILLE
CANOT
BLACK
CREEK
LOUISVILLE
AND
BIG
BAYOU
TWELVEMILE
ISLAND
MOBILE
RIVER
BALDWIN
COUNTY
CANAL
BLACK
CHICKASAW
CREEK
BAYOU
water
Akka
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000

MOBILE COUNTY, ALABAMA — SHEET NUMBER 60

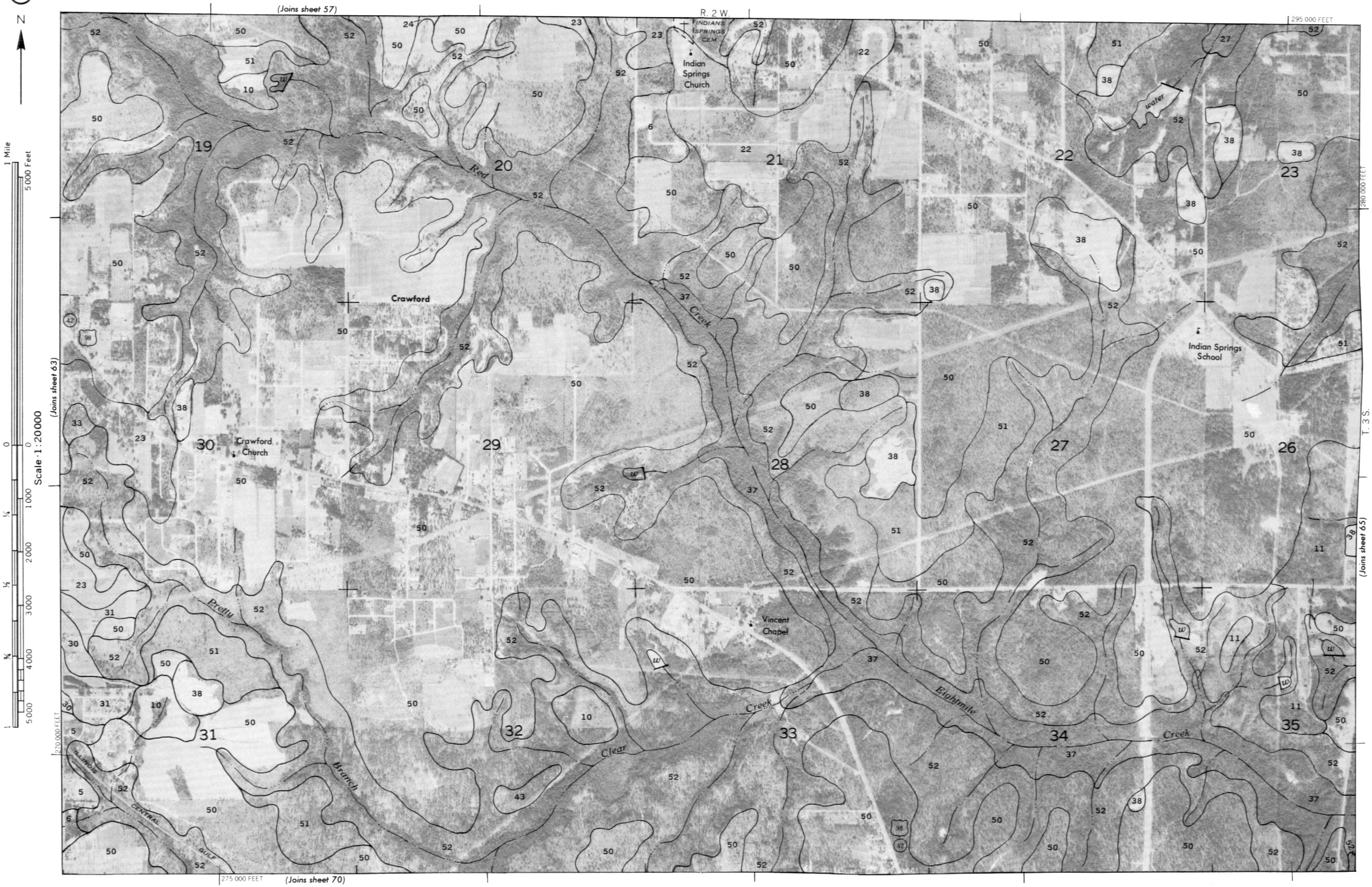



61
N
(Joins sheet 54)
(Joins sheet 62)
(Joins sheet 67)
205 000 FEET
280 000 FEET
220 000 FEET
270 000 FEET
R. 4 W.
T. 3 S.
Flat Creek
Toms Branch
MISSISSIPPI
GEORGE COUNTY
JACKSON CO
MISSISSIPPI
19
20
21
28
29
30
31
32
33
1 Mile
5000 Feet
Scale 1:20000


62
N
(Joins sheet 55)
R. 4 W.
R. 3 W.
245 000 FEET
(Joins sheet 61)
(Joins sheet 63)
(Joins sheet 68)
T. 3 S.
225 000 FEET
270 000 FEET
BIG CREEK LAKE
Mill Br
Crooked Cr
water
1 Mile
5000 Feet
Scale 1:20000


250 000 FEET
R. 3 W.
(Joins sheet 56)
Semmes
Semmes School
280 000 FEET
T. 3 S.
(Joins sheet 62)
Holiness Church
Crooked
Creek
water
Allentown Church
Hamilton
Creek
Double
Branch
ILLINOIS
CENTRAL
GULF
(Joins sheet 64)
270 000 FEET
(Joins sheet 69)
270 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000

MOBILE COUNTY, ALABAMA — SHEET NUMBER 64




300 000 FEET
R. 2 W. | R. 1 W.
(Joins sheet 58)
280 000 FEET
T. 3 S.
(Joins sheet 64)
(Joins sheet 66)
(Joins sheet 71)
270 000 FEET
320 000 FEET
N
1 Mile
5 000 Feet
Scale 1:20000
Eight Mile
Eightmile
Creek
CHICKASAW
North Mobile
Gum
Tree
Branch
Whistler
ILLINOIS
CENTRAL
GULF
SOUTHERN
water
Vigor School
Summerville
Chickasaw Terrace School
Bienville School
Carver School
PRICHARD
WOLF RIDGE CEMETERY


(Joins sheet 59)
(Joins sheet 65)
(Joins sheet 72)
R. 1 W. | R. 1 E.
T. 3 S.
340 000 FEET
280 000 FEET
270 000 FEET
325 000 FEET
N
Scale 1:20000
1 Mile
5 000 Feet
0
1000
2000
3000
4000
5 000
DUCK LAKE
SHELL BAYOU
LITTLE BAYOU
BEAR CREEK
BAYOU
GREENWOOD
CHICKASAW CREEK
HOG BAYOU
ROUND ISLAND
Sewage Disposal
LAGOON
MOBILE RIVER
LOUISVILLE AND NASHVILLE
BLAKELEY ISLAND
SPANISH RIVER
BALDWIN COUNTY
Akka
Sibert
Turnerville School
Plateau
County Training School
Whitley School
Prichard Homes School
SOUTHERN
ST LOUIS
SAN FRANCISCO
43
13
14
22
12
23
24
54
19
30
28
57
44
26
25
17
36
38
6

MOBILE COUNTY, ALABAMA — SHEET NUMBER 67


N
(Joins sheet 62)
(Joins sheet 67)
(Joins sheet 69)
(Joins sheet 74)
R. 4 W.
R. 3 W.
T. 4 S.
245 000 FEET
265 000 FEET
255 000 FEET
225 000 FEET
Tanner Williams
BIG CREEK LAKE
Big Creek
Scale 1:20000
1 Mile
5000 Feet

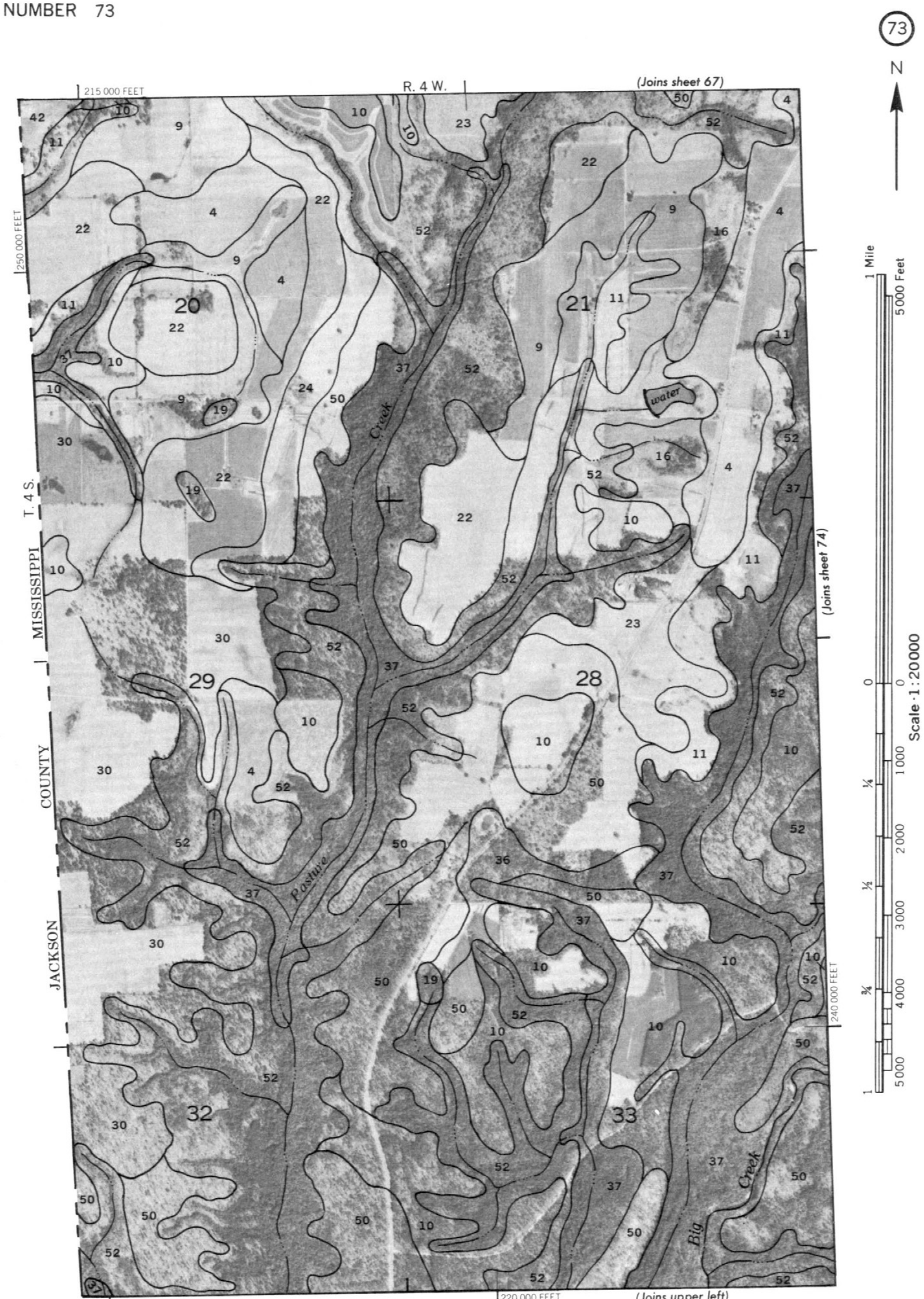

69
N
250 000 FEET
R. 3 W.
(Joins sheet 63)
265 000 FEET
T. 4 S.
(Joins sheet 68)
(Joins sheet 70)
(Joins sheet 75)
270 000 FEET
255 000 FEET
BIG CREEK LAKE
Hamilton Creek
Pierce Creek
Pleasant View Church
Foster Grove Church
BATES FIELD
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1


N
Scale 1:20000
1 Mile
5000 Feet
(Joins sheet 64)
R. 2 W.
295 000 FEET
265 000 FEET
T. 4 S.
(Joins sheet 69)
(Joins sheet 71)
(Joins sheet 76)
275 000 FEET
255 000 FEET
Stone Branch
Clear Creek
ILLINOIS
CENTRAL
GULF
Orchard
Moffat Road Church
Forest Hill
Threemile Creek
Twelvemile Creek
New Hope Church
water

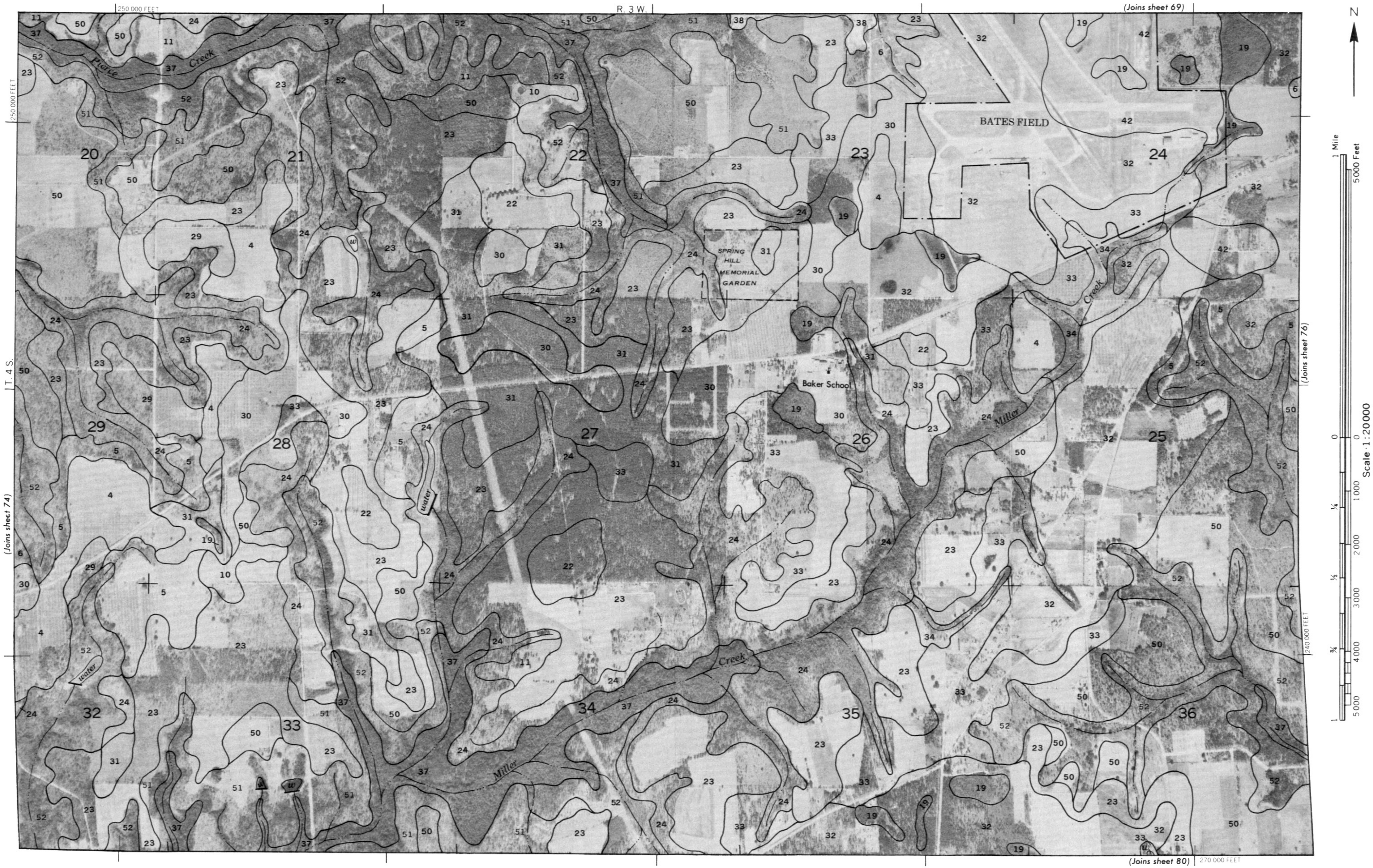

71
N
300 000 FEET
R. 2 W.
R. 1 W.
(Joins sheet 65)
265 000 FEET
T. 4 S.
(Joins sheet 70)
(Joins sheet 72)
(Joins sheet 77)
255 000 FEET
320 000 FEET
Trinity Garden School
Neely
Grant School
Yellow Pine School
Glendale School
Snug Harbor School
Forest Hill School
Pine Grove
Toulminville
Gorgas School
ST. AUSTIN CEMETERY
OAKLAWN CEMETERY
GREEN MOUND CEMETERY
Crichton
Mt. Hebron Church
Spring Hill
Spring Hill College
Allenville
Evans School
Threemile Creek
Toulmins Spring Branch
water
ILLINOIS CENTRAL GULF
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000


72
N
(Joins sheet 66)
(Joins sheet 71)
(Joins sheet 78)
R. 1 W. | R. 1 E.
340 000 FEET
265 000 FEET
255 000 FEET
320 000 FEET
T. 4 S.
Scale 1:20000
1 Mile
5000 Feet
Magazine
SAN FRANCISCO
LOUISVILLE AND NASHVILLE
SOUTHERN
ST LOUIS
ST. LOUIS POINT
ILLINOIS
Creek
Threemile
CENTRAL
GULF
INDUSTRIAL
CANAL
OAKLAWN CEMETERY
MOBILE
RIVER
BLAKELEY
ISLAND
LAGOON
SPANISH
BALDWIN
COUNTY
RIVER
POLECAT
BAY
Owens School
Dunbar High School
Clarke School
State Street School
Semmes School
St. Marys School
BANKHEAD TUNNEL

MOBILE COUNTY, ALABAMA — SHEET NUMBER 73



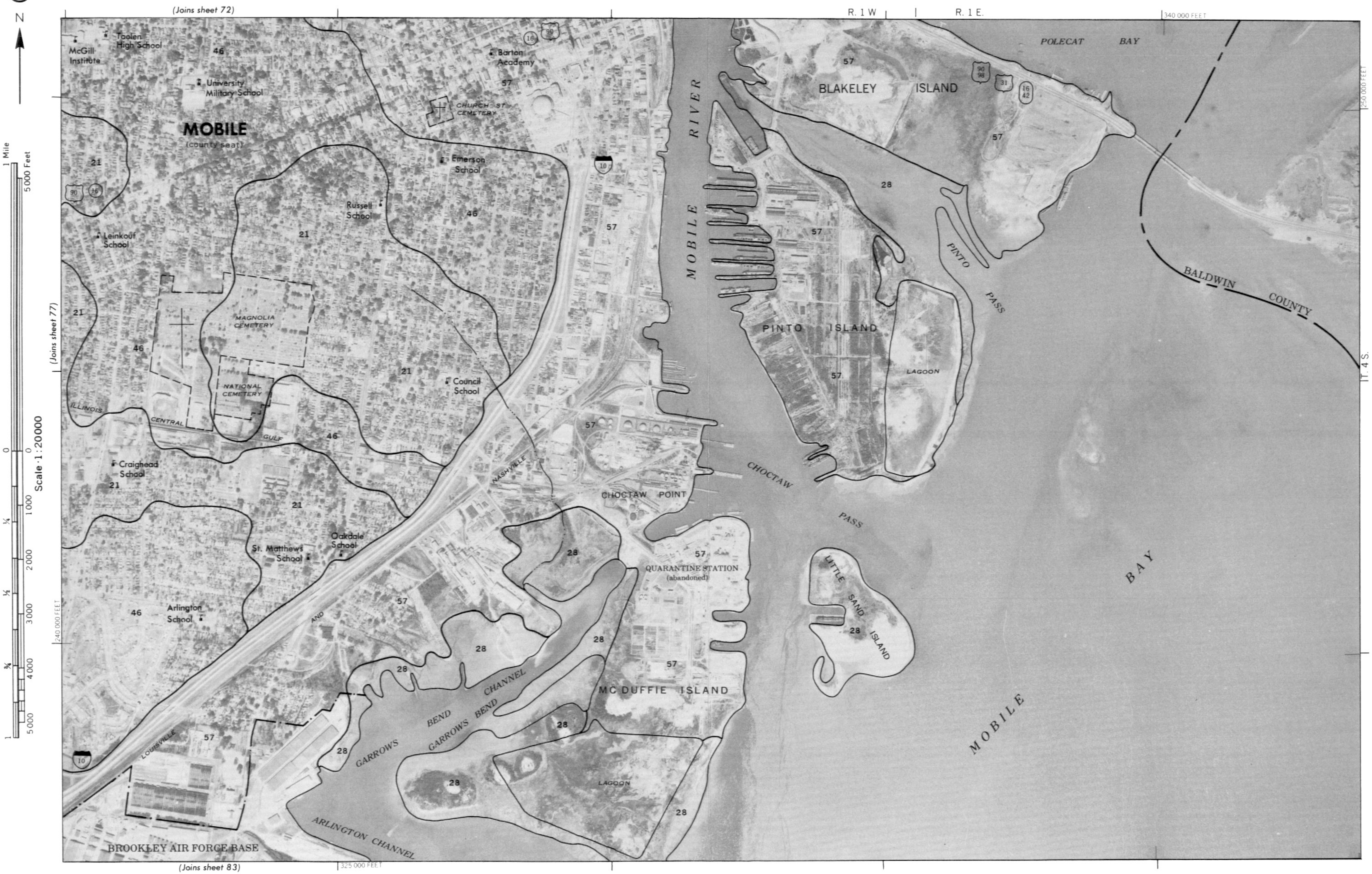

N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 68)
(Joins sheet 73)
(Joins sheet 75)
(Joins sheet 79)
R. 4 W.
R. 3 W.
T. 4 S.
245 000 FEET
250 000 FEET
240 000 FEET
225 000 FEET
Pierce Creek
Big Creek
Wolf Branch
Seven Hills
water


(Joins sheet 69)
(Joins sheet 74)
(Joins sheet 76)
(Joins sheet 80)
250 000 FEET
270 000 FEET
240 000 FEET
R. 3 W.
T. 4 S.
BATES FIELD
SPRING HILL MEMORIAL GARDEN
Baker School
Pierce Creek
Miller Creek
N
Scale 1:20 000
1 Mile
5000 Feet


76
N
(Joins sheet 70)
R. 2 W.
295 000 FEET
250 000 FEET
(Joins sheet 75)
(Joins sheet 77)
T. 4 S.
240 000 FEET
(Joins sheet 81)
275 000 FEET
1 Mile
5000 Feet
Scale 1:20000
Wheelerville
West Hill
St. Marys School
Twelvemile Creek
Estava Cr
Milkhouse Creek
Second Cr
Spencer Branch
Jackson Heights
water
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35


77
N
(Joins sheet 71)
(Joins sheet 76)
(Joins sheet 78)
(Joins sheet 82)
R. 2 W.
R. 1 W.
T. 4 S.
300 000 FEET
250 000 FEET
240 000 FEET
315 000 FEET
Catholic Boys School
Tacon
Old Shell Road School
Murphy High School
Westlawn School
Woodcock School
Williamson School
Mertz School
Mertz
Hurtel School
Cottage Hill
Eslava Creek
Swamp
Woodcock Branch
Wragg
Bolton Branch
Creek
ILLINOIS
CENTRAL
GULF
L AND N
water
19
20
23
24
25
26
29
30
32
35
36
39
51
12
17
21
38
46
53
57
w
65
90
16
163
10
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾

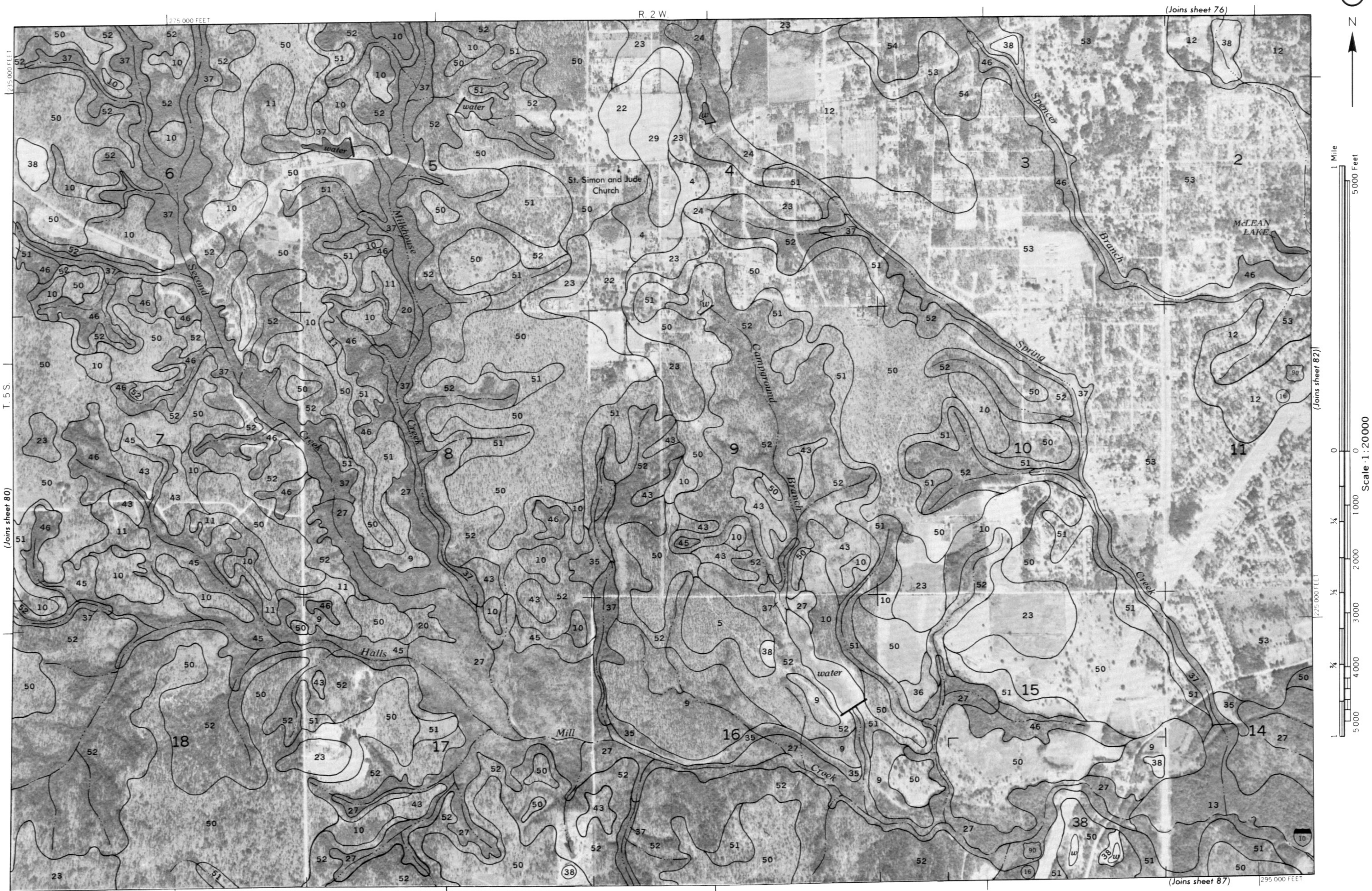
MOBILE COUNTY, ALABAMA — SHEET NUMBER 78



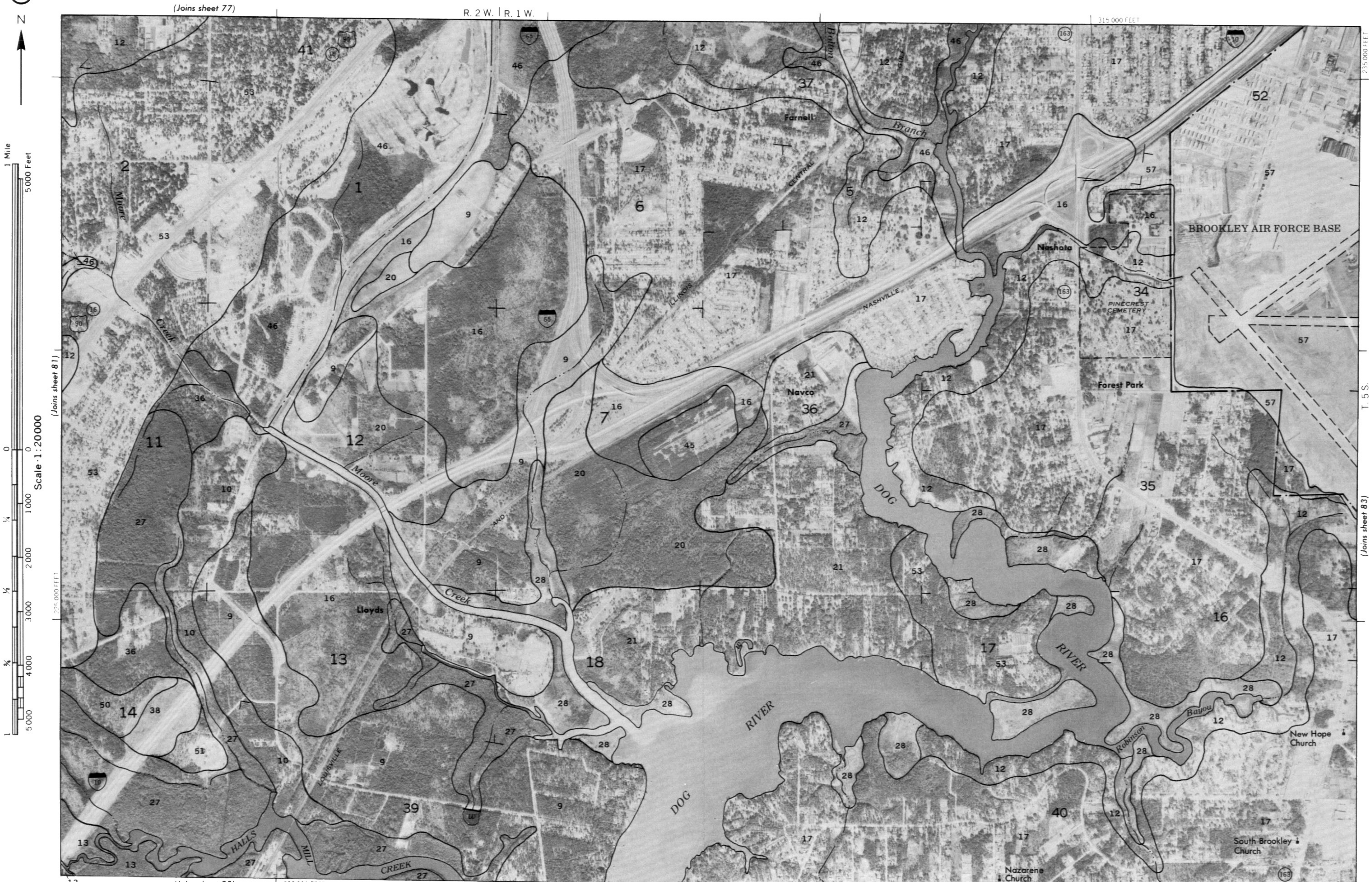
79

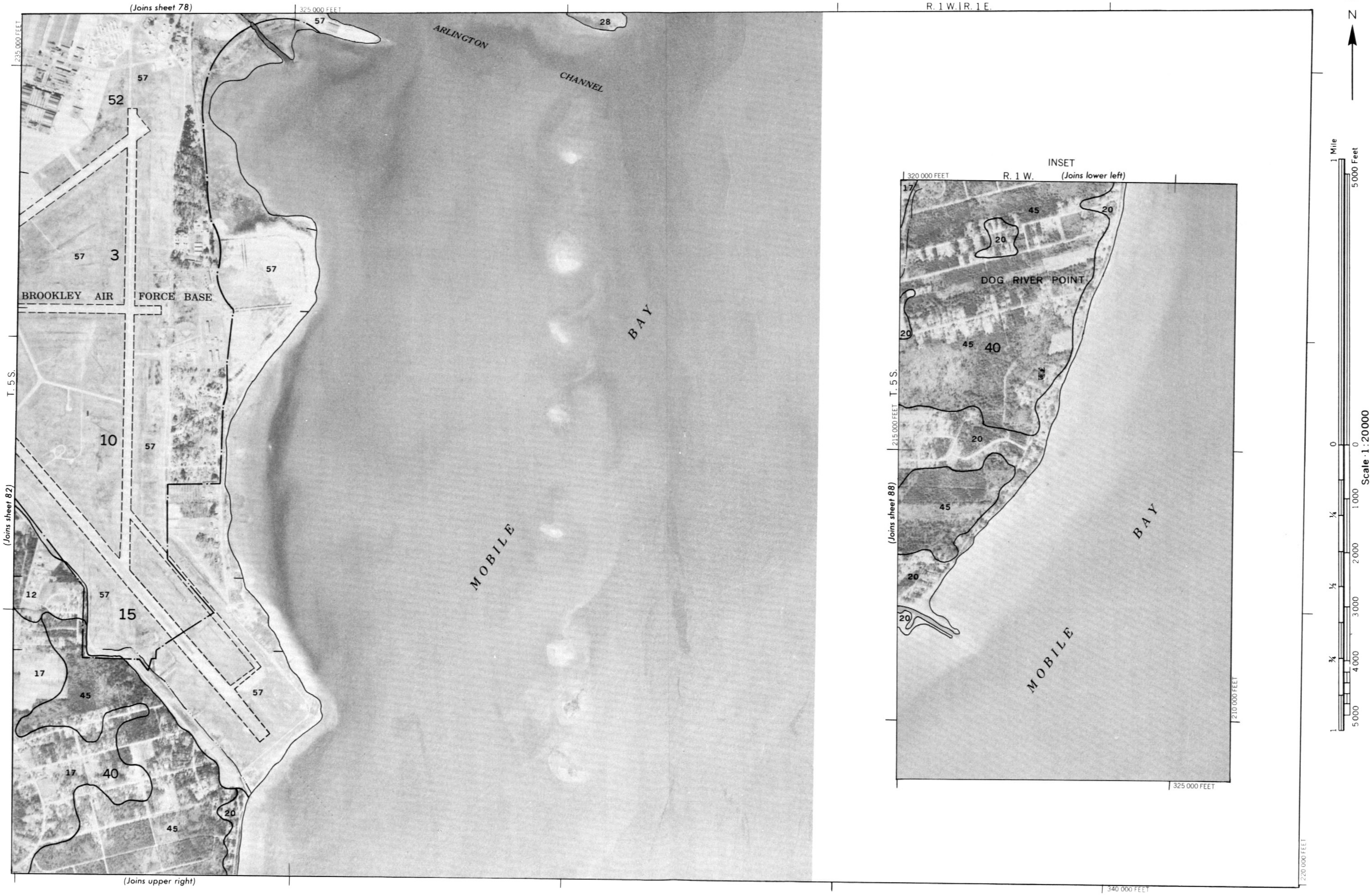

225 000 FEET
235 000 FEET
R. 4 W.
R. 3 W.
(Joins sheet 74)
(Joins sheet 80)
(Joins sheet 85)
(Joins inset, sheet 73)
245 000 FEET
T. 5 S.
N
Landing Field
water
Wolf Branch
Simmons Branch
Bethel Hall Church
Miller Creek
Turkey Creek
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1
Scale 1:20000


(Joins sheet 75)
R. 3 W.
270 000 FEET
235 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 79)
(Joins sheet 81)
(Joins sheet 86)
T. 5 S.
225 000 FEET
250 000 FEET
Hamilton Creek
Miller Creek
Halls Mill Creek
Turkey Creek
Mt. Zion Church
Magnolia Church
Dawes
water

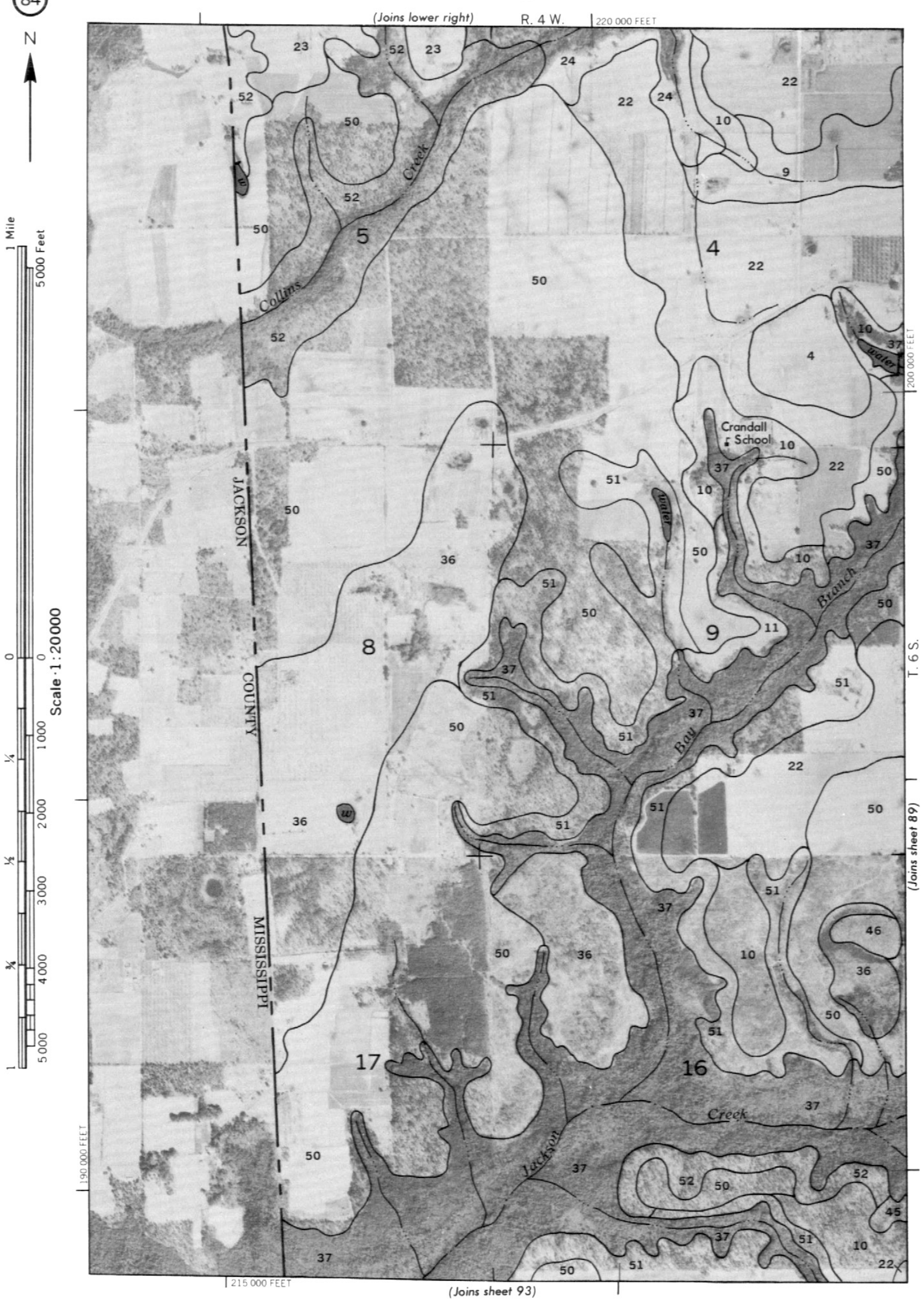

81
N
R. 2 W.
T. 5 S.
275 000 FEET
235 000 FEET
225 000 FEET
295 000 FEET
(Joins sheet 76)
(Joins sheet 80)
(Joins sheet 82)
(Joins sheet 87)
St. Simon and Jude Church
Milkhouse Creek
Second Creek
Halls Creek
Mill Creek
Campground Branch
Spring Creek
Spencer Branch
McLEAN LAKE
water
1 Mile
5000 Feet
Scale 1:20000

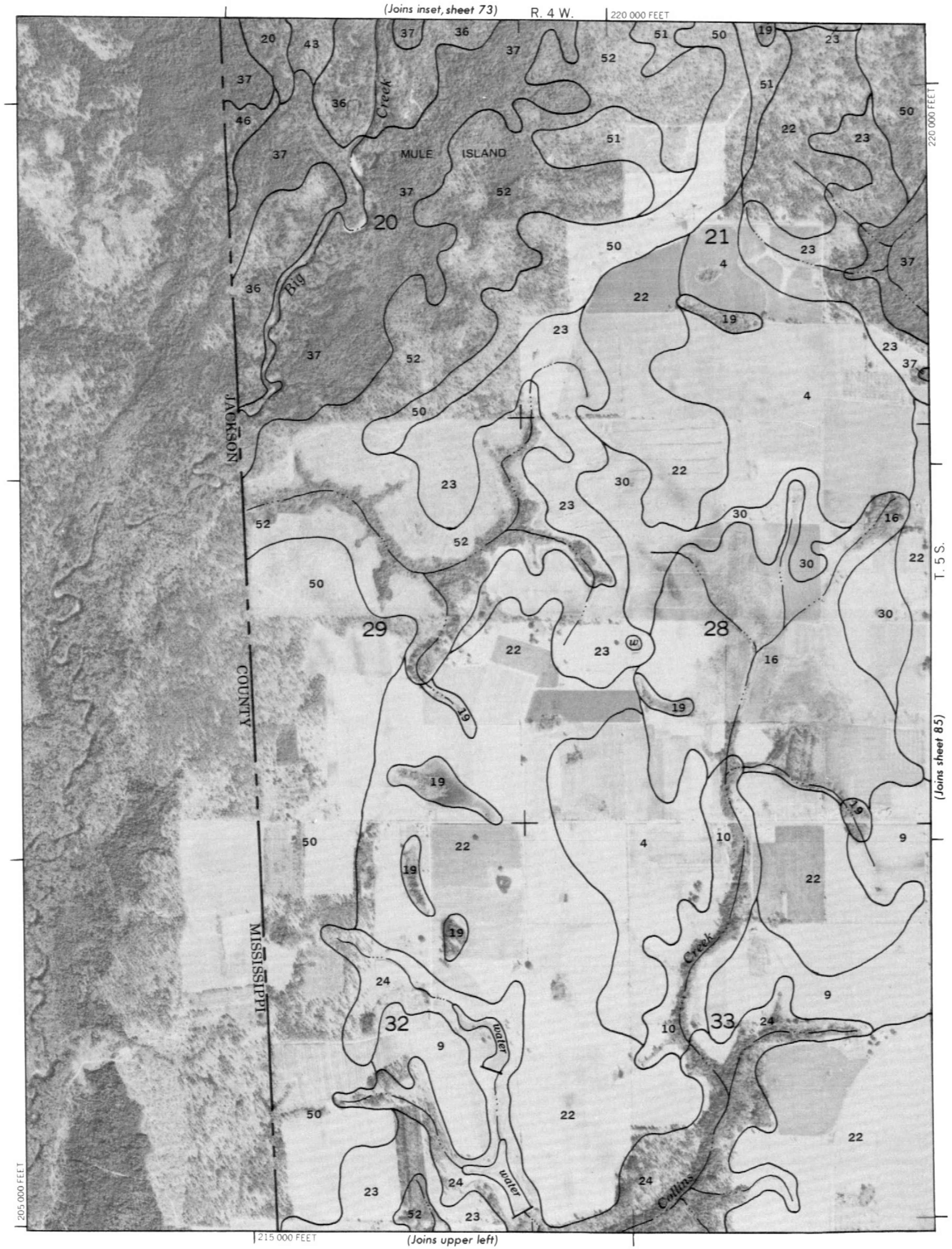
MOBILE COUNTY, ALABAMA — SHEET NUMBER 82




(Joins sheet 78)
325 000 FEET
R. 1 W. | R. 1 E.
N
ARLINGTON
CHANNEL
28
57
52
3
BROOKLEY AIR FORCE BASE
10
15
12
17
45
40
20
MOBILE
BAY
T. 5 S.
(Joins sheet 82)
(Joins upper right)
340 000 FEET
220 000 FEET
INSET
320 000 FEET
R. 1 W.
(Joins lower left)
DOG RIVER POINT
215 000 FEET
210 000 FEET
(Joins sheet 88)
325 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000

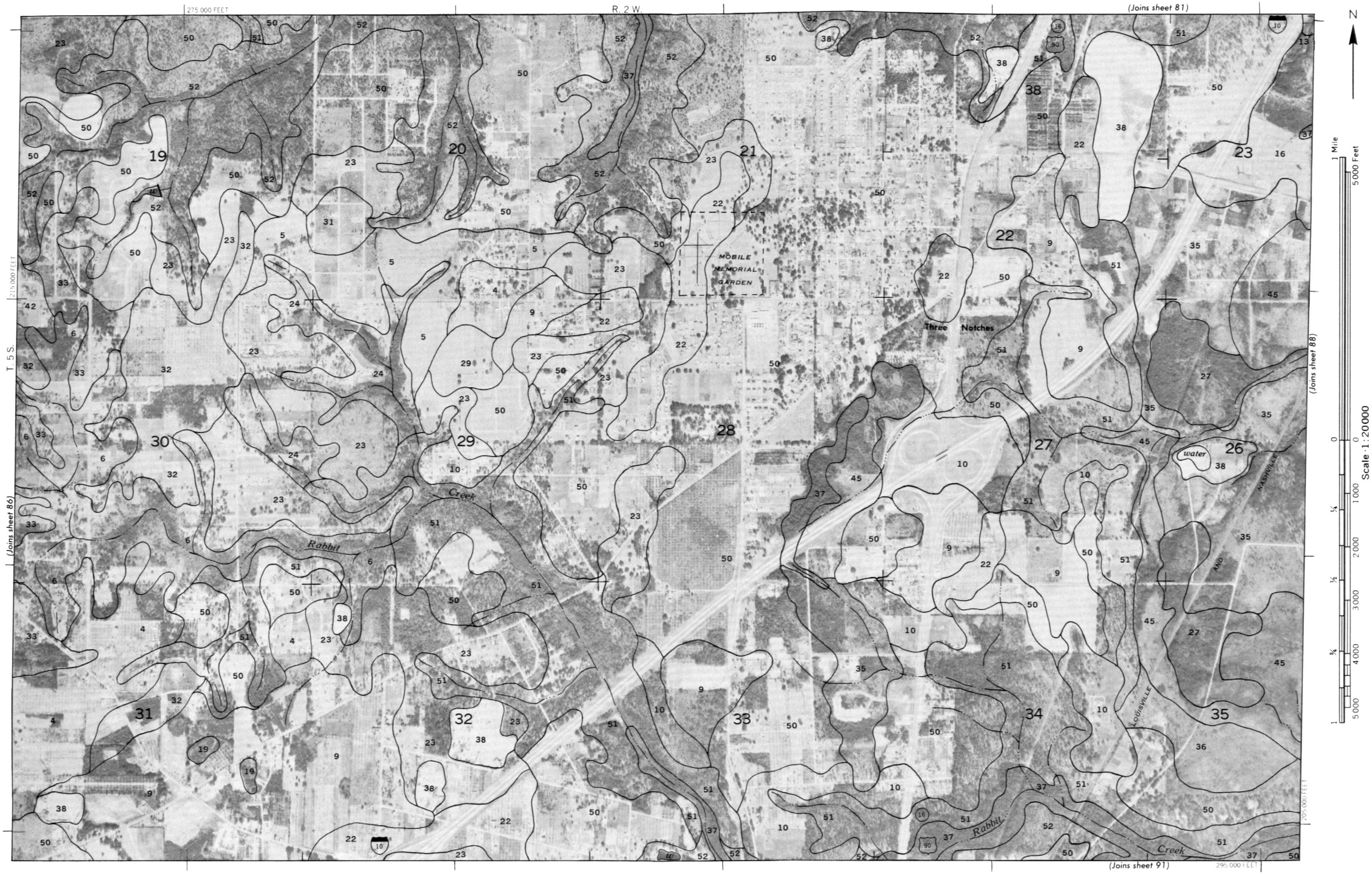
INSET


N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins lower right)
R. 4 W.
220 000 FEET
200 000 FEET
190 000 FEET
215 000 FEET
T. 6 S.
(Joins sheet 89)
(Joins sheet 93)
JACKSON COUNTY
MISSISSIPPI
Collins Creek
Crandall School
Bay Branch
Jackson Creek
water
5
4
8
9
16
17

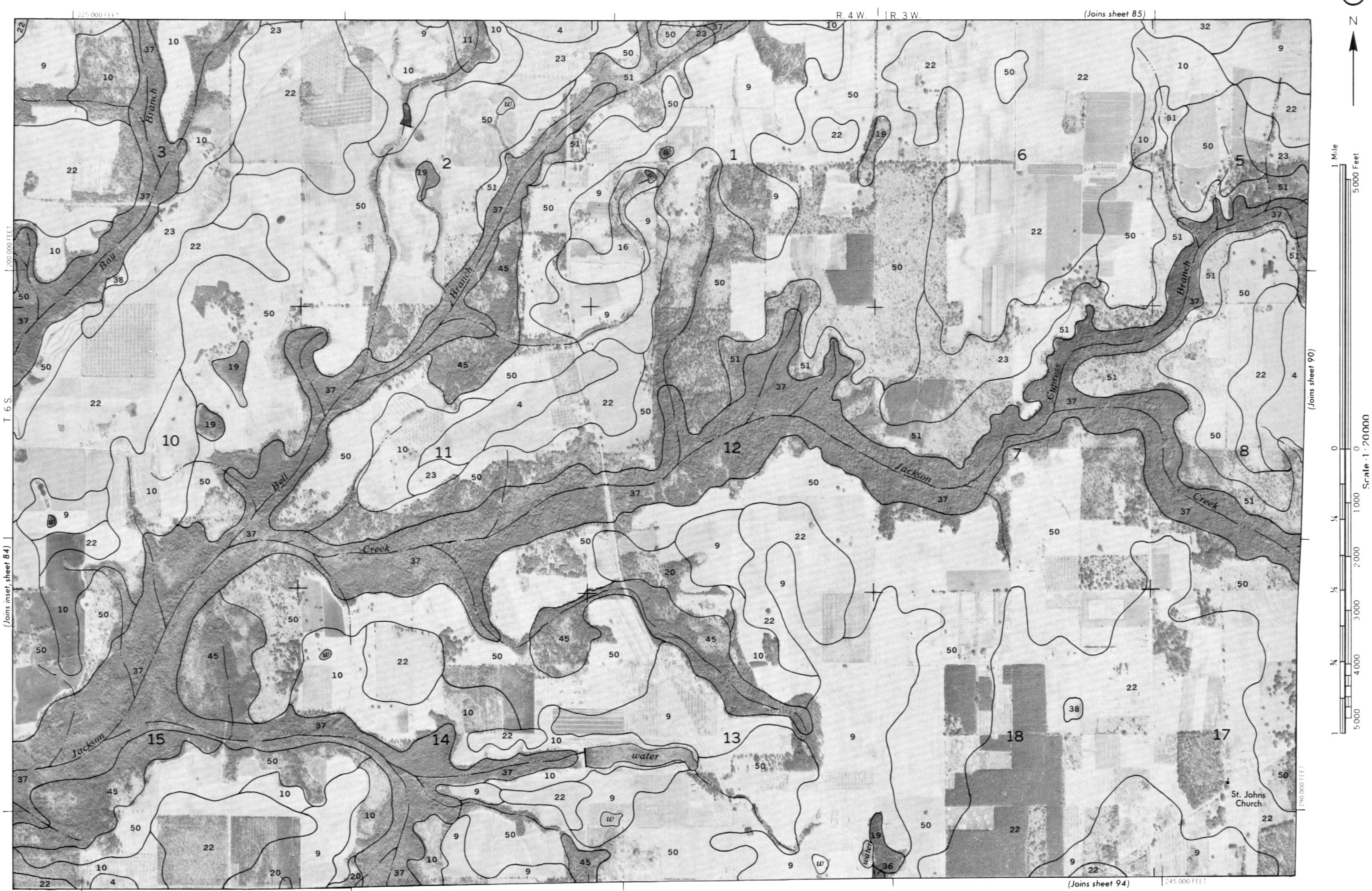

(Joins inset, sheet 73)
R. 4 W.
220 000 FEET
205 000 FEET
215 000 FEET
T. 5 S.
(Joins sheet 85)
(Joins upper left)
MULE ISLAND
Big Creek
Creek
Collins
JACKSON COUNTY
MISSISSIPPI
water
20
21
28
29
32
33


85
N
(Joins sheet 79)
R. 4 W.
R. 3 W.
T. 5 S.
(Joins sheet 84)
(Joins sheet 86)
(Joins sheet 89)
225 000 FEET
220 000 FEET
205 000 FEET
245 000 FEET
COPELAND ISLAND
Miller Creek
Deakle
Island Branch
Baker Creek
Creek
Bell Branch
Union Church
Providence Church
water
1 Mile
5000 Feet
Scale 1:20000


N
(Joins sheet 80)
R. 3 W.
270 000 FEET
220 000 FEET
(Joins sheet 85)
(Joins sheet 87)
(Joins sheet 90)
210 000 FEET
250 000 FEET
T. 5 S.
1 Mile
5000 Feet
Scale 1:20000
Dawes Union School
Baker
Beaver Pond
Creek
IDLE HOUR AIRPORT
Meadowlake
Pentecostal Church
Deakle
Creek
water


275 000 FEET
R. 2 W.
(Joins sheet 81)
N
T. 5 S.
215 000 FEET
(Joins sheet 86)
(Joins sheet 88)
(Joins sheet 91)
295 000 FEET
205 000 FEET
MOBILE MEMORIAL GARDEN
Three Notches
Rabbit Creek
Rabbit
Creek
water
LOUISVILLE
AND
NASHVILLE
1 Mile
5000 Feet
Scale 1:20000

MOBILE COUNTY, ALABAMA — SHEET NUMBER 88


89
N
225 000 FEET
R. 4 W.
R. 3 W.
(Joins sheet 85)
200 000 FEET
T. 6 S.
(Joins inset, sheet 84)
(Joins sheet 90)
(Joins sheet 94)
190 000 FEET
245 000 FEET
Bay Branch
Bell Branch
Jackson Creek
Cypress Branch
water
St. Johns Church
1 Mile
5000 Feet
Scale 1:20000


N
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
0
1000
2000
3000
4000
5000
(Joins sheet 86)
R. 3 W.
270 000 FEET
(Joins sheet 89)
(Joins sheet 91)
(Joins sheet 95)
250 000 FEET
200 000 FEET
190 000 FEET
T. 6 S.
Branch
Cypress
Fowl
River
Cedar Grove
Church
water
Creek
Jackson
10

MOBILE COUNTY, ALABAMA — SHEET NUMBER 91

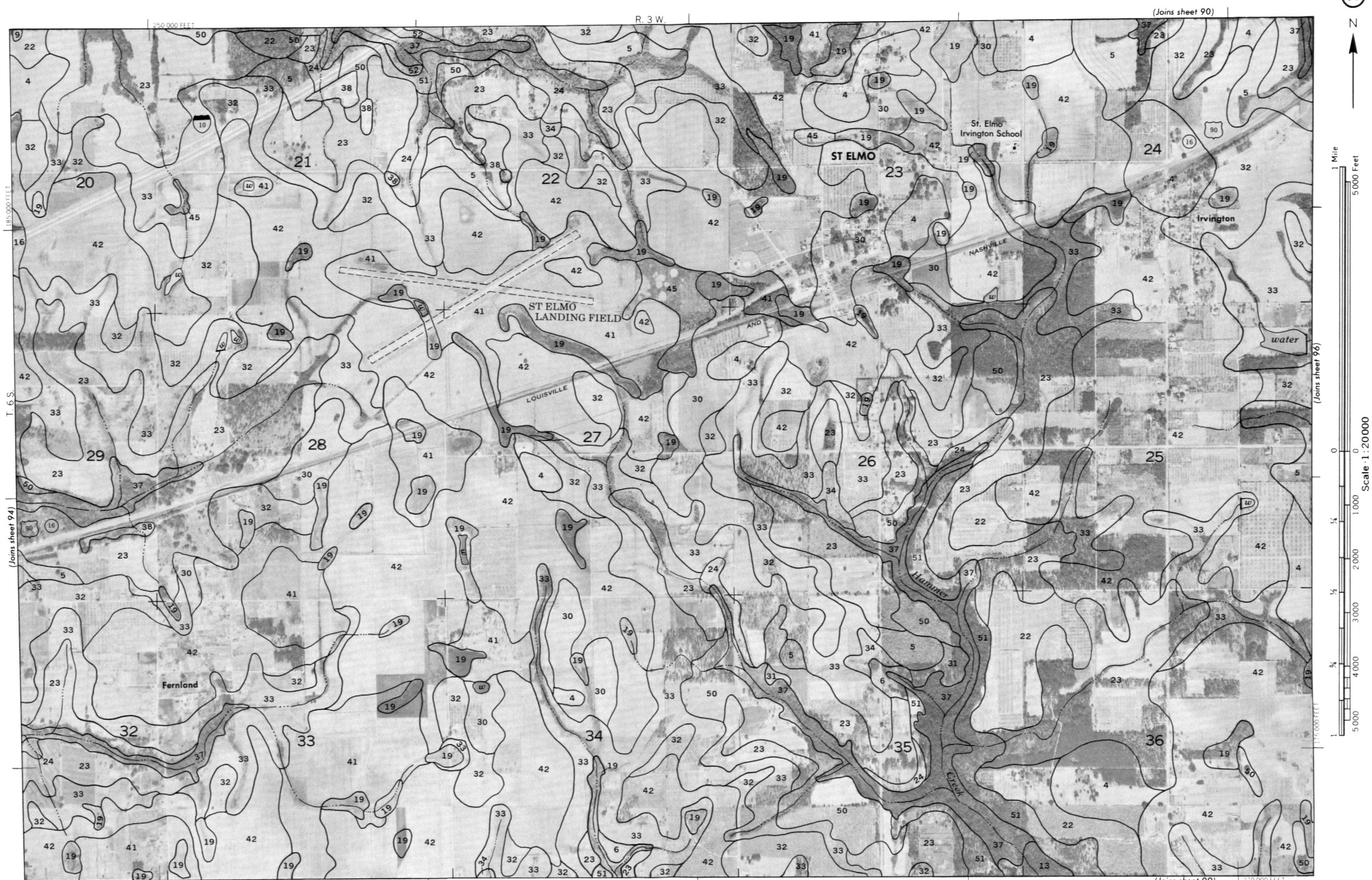

(Joins sheet 88)
(Joins sheet 91)
(Joins sheet 97)
R. 2 W. | R. 1 W.
T. 6 S.
N
Scale 1:20000
1 Mile
5000 Feet
315 000 FEET
200 000 FEET
190 000 FEET
300 000 FEET
HOLLINGERS ISLAND
Hollingers Island
Hollingers Island Church
US GOVERNMENT RESERVATION
LOUISVILLE AND NASHVILLE
DEER RIVER POINT
MOBILE BAY
HOLLINGERS ISLAND CHANNEL
Whiskey Branch
Alligator Bayou
North Fork
MIDDLE FORK DEER RIVER
Deer River
South Fork Deer River
US GOVERNMENT RESERVATION

MOBILE COUNTY, ALABAMA — SHEET NUMBER 93

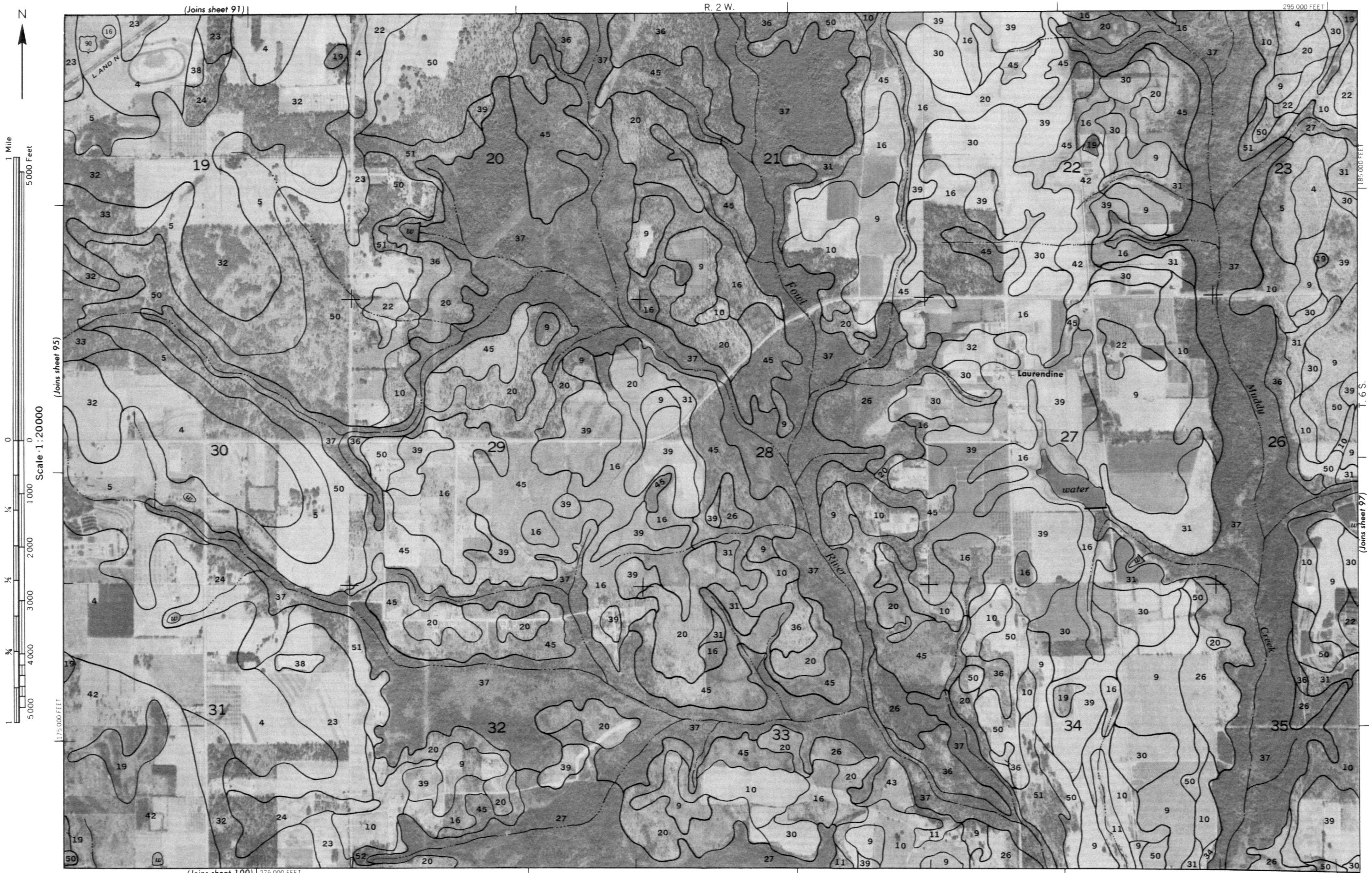
INSET B

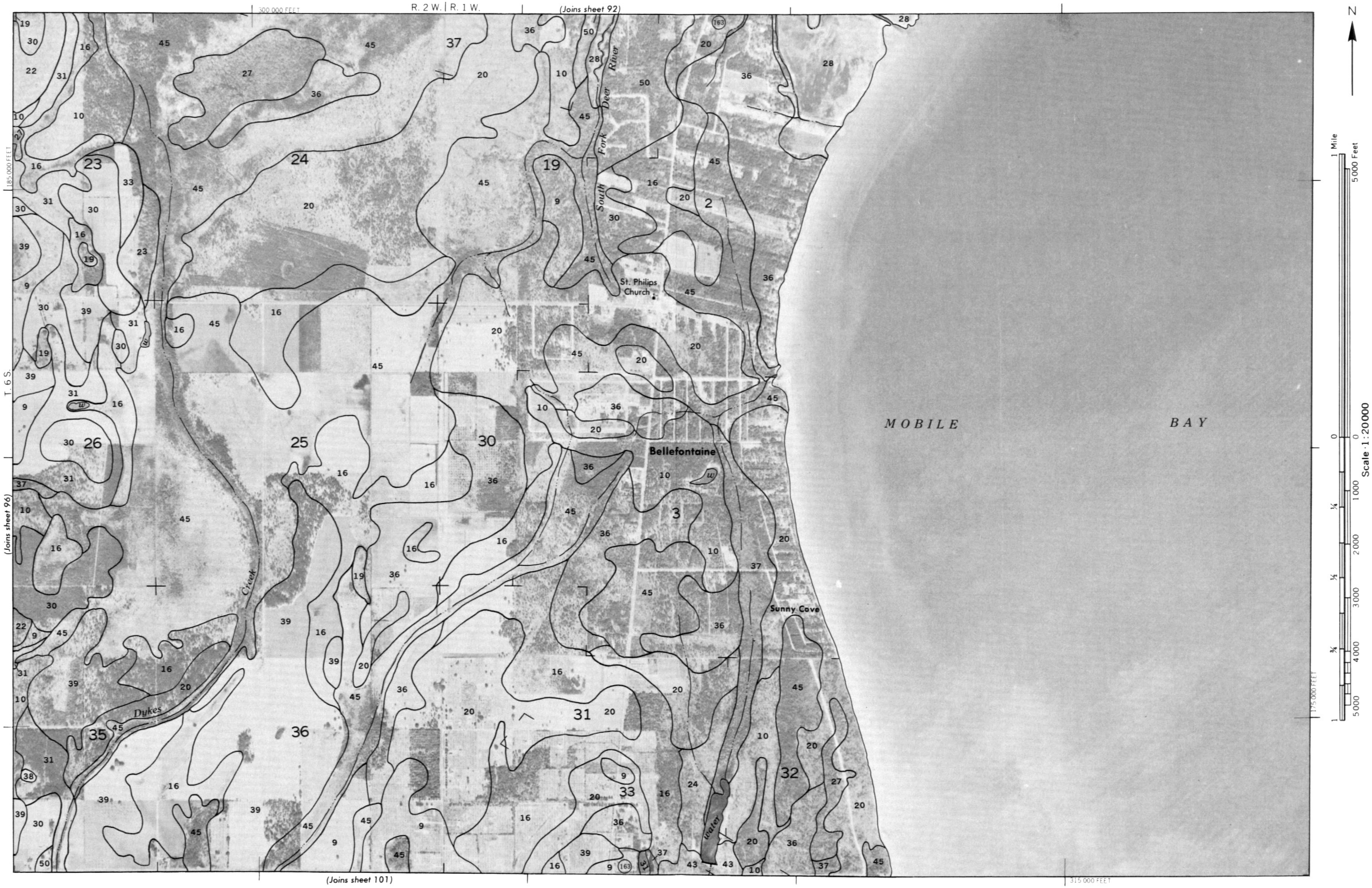
INSET A

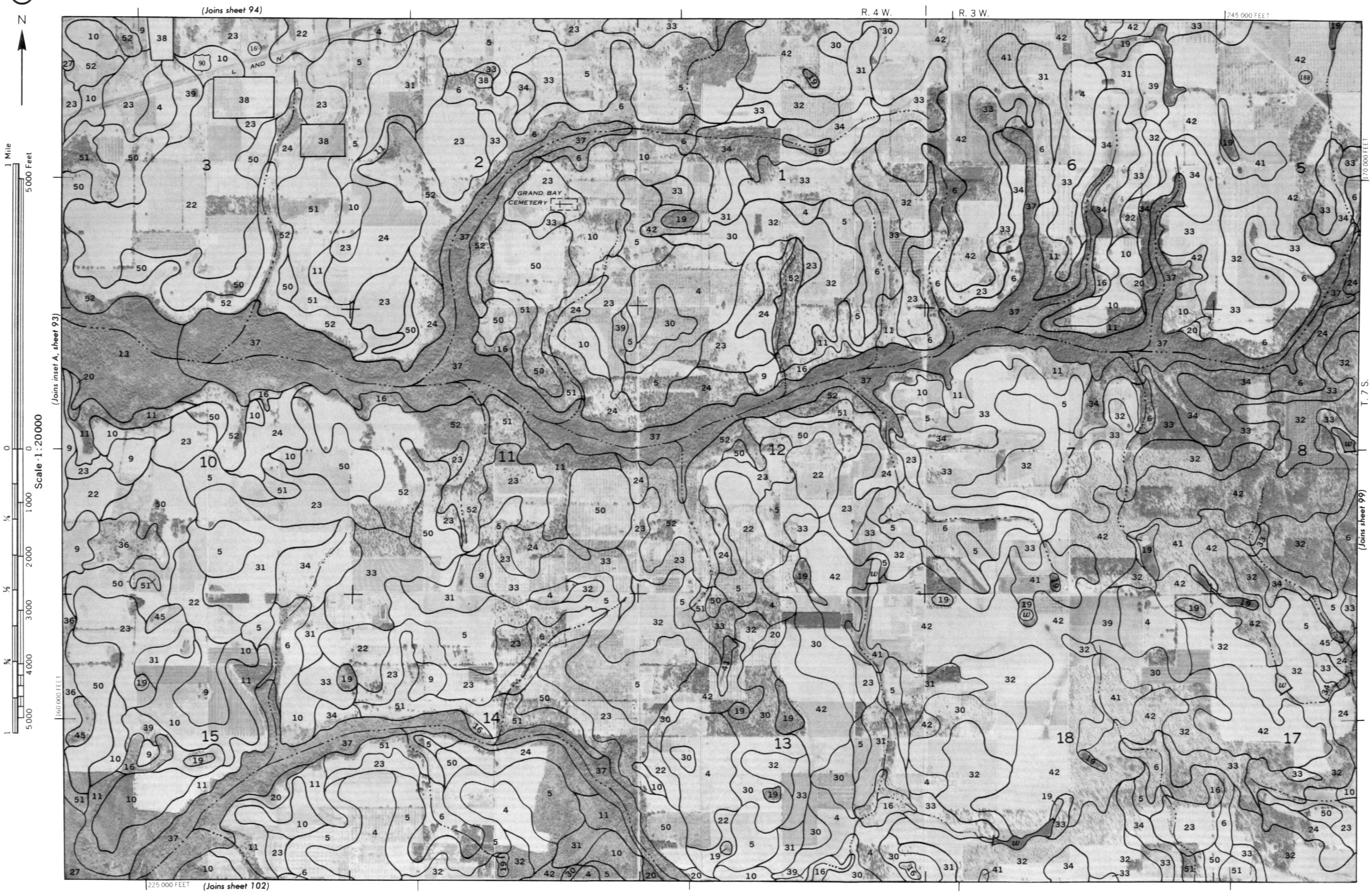

N
(Joins sheet 89)
(Joins sheet 93)
(Joins sheet 95)
(Joins sheet 98)
R. 4 W.
R. 3 W.
T. 6 S.
245 000 FEET
185 000 FEET
225 000 FEET
175 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
Franklin
Creek
Branch
Reedy
Grand Bay
NASHVILLE
AND
LOUISVILLE
water
10
90
16

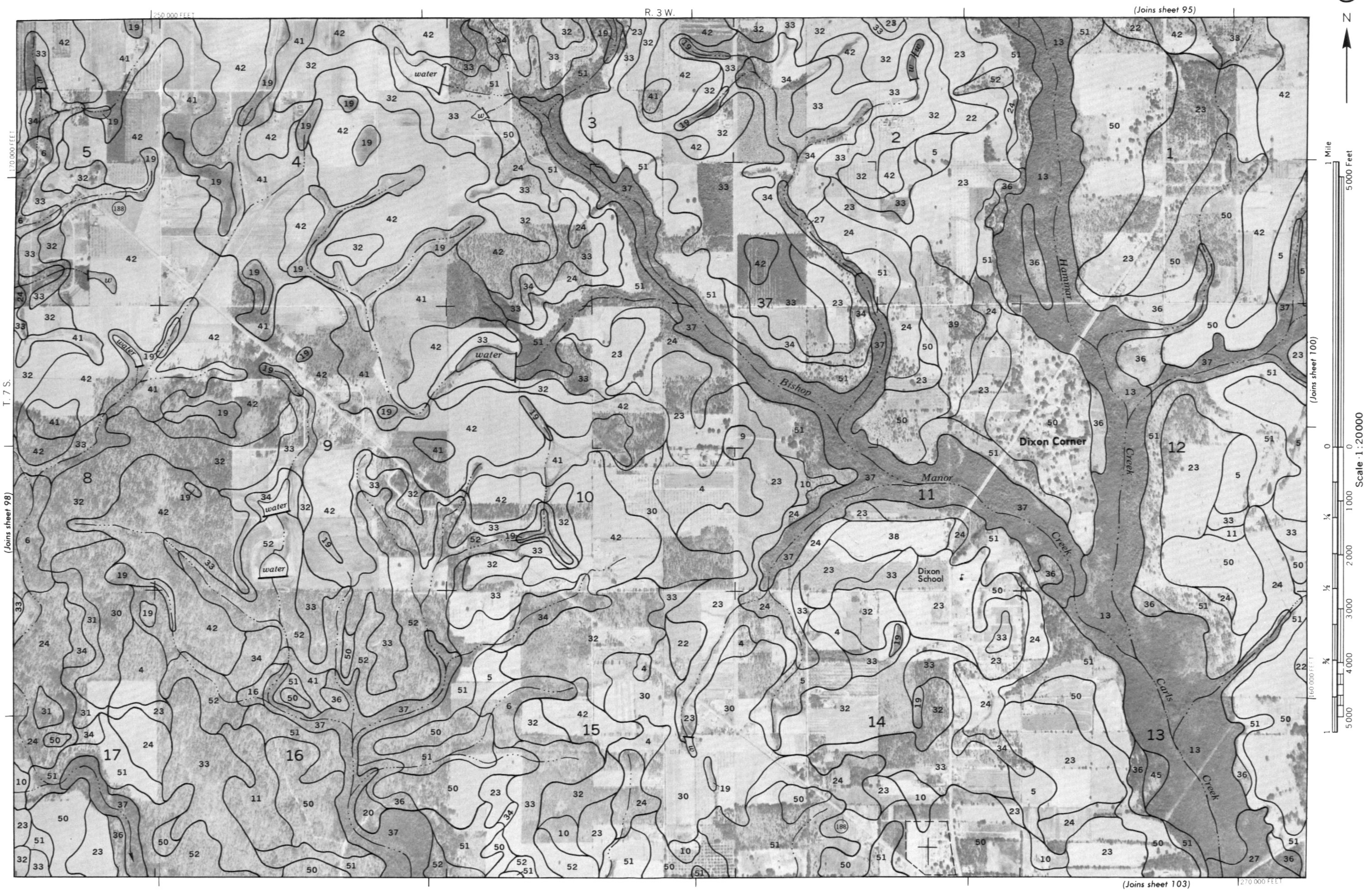

95
N
(Joins sheet 90)
(Joins sheet 94)
(Joins sheet 96)
(Joins sheet 99)
R. 3 W.
T. 6 S.
250 000 FEET
185 000 FEET
175 000 FEET
270 000 FEET
ST ELMO
St. Elmo Irvington School
Irvington
ST ELMO LANDING FIELD
LOUISVILLE
AND
NASHVILLE
Fernland
Hammer
Creek
water
1 Mile
5000 Feet
Scale 1:20000

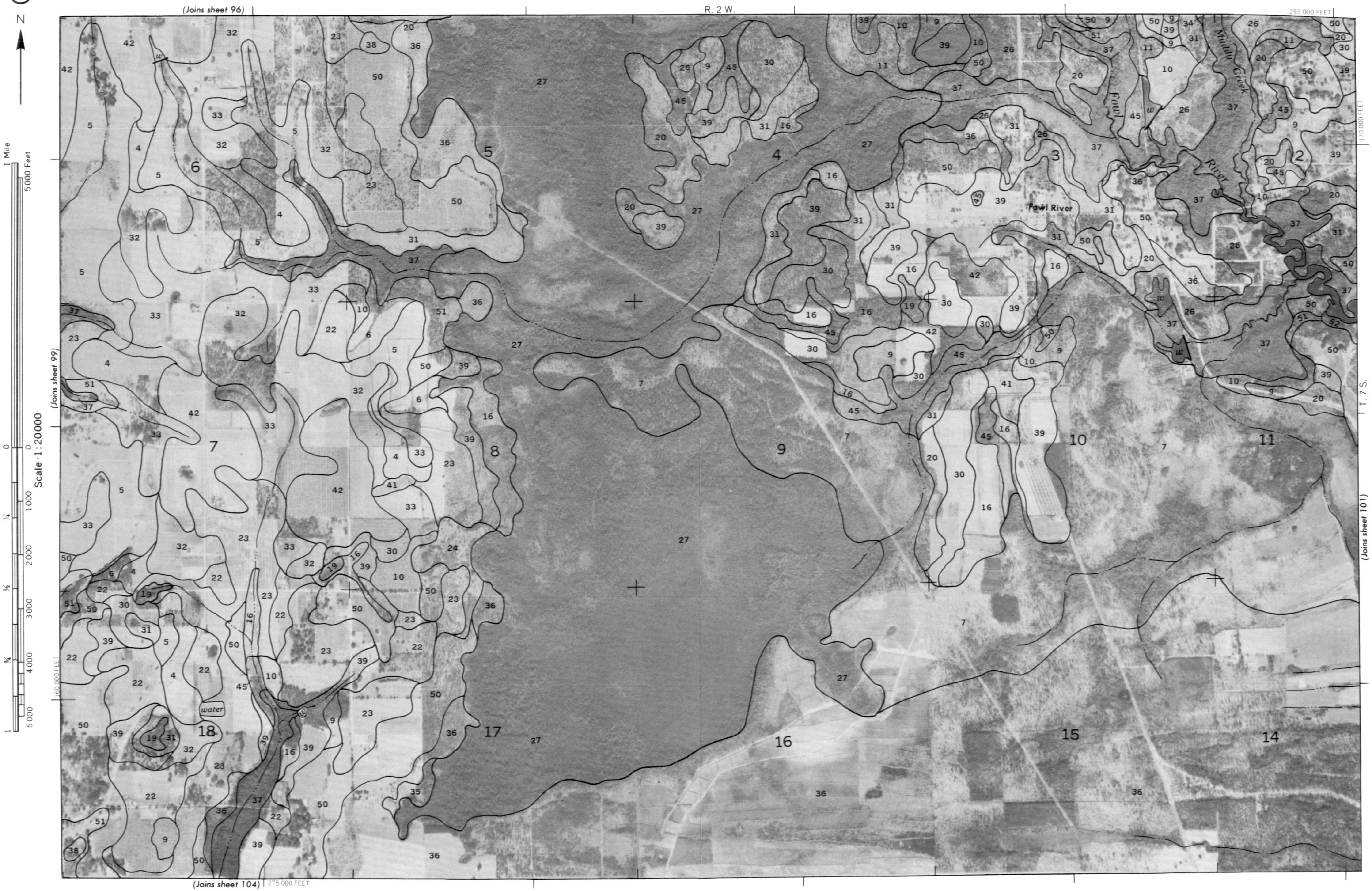
MOBILE COUNTY, ALABAMA — SHEET NUMBER 96



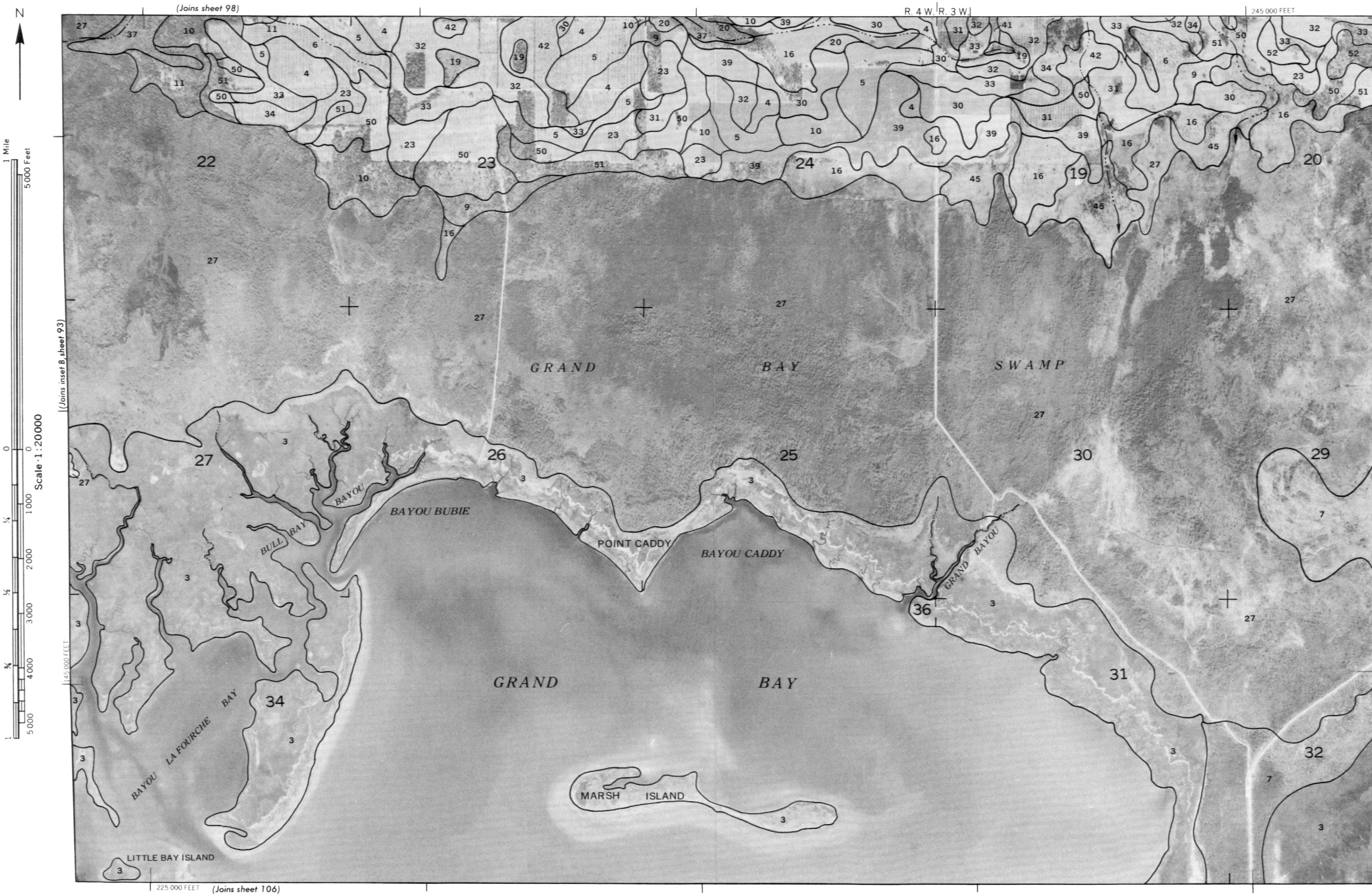

97
N
(Joins sheet 92)
R. 2 W. | R. 1 W.
300 000 FEET
185 000 FEET
T. 6 S.
(Joins sheet 96)
(Joins sheet 101)
315 000 FEET
175 000 FEET
South Fork Deer River
St. Philips Church
Bellefontaine
Sunny Cove
Dykes Creek
Creek
Water
163
MOBILE BAY
Scale 1:20000
1 Mile
5000 Feet

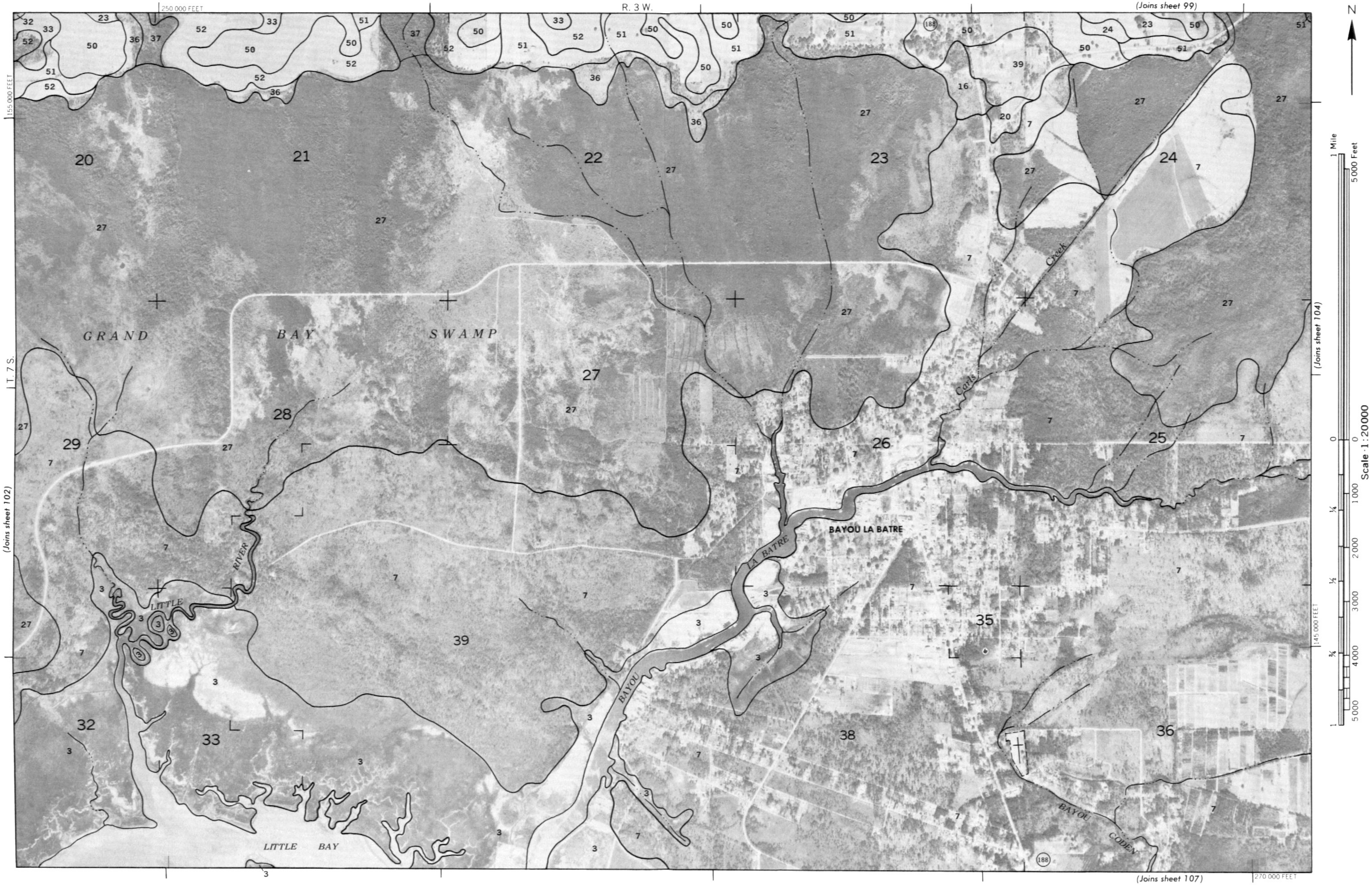

N
(Joins sheet 94)
R. 4 W.
R. 3 W.
245 000 FEET
170 000 FEET
160 000 FEET
225 000 FEET
GRAND BAY CEMETERY
L AND N
(Joins inset A, sheet 93)
T. 7 S.
(Joins sheet 99)
(Joins sheet 102)
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1


(Joins sheet 95)
(Joins sheet 98)
(Joins sheet 100)
(Joins sheet 103)
R. 3 W.
T. 7 S.
250 000 FEET
170 000 FEET
160 000 FEET
270 000 FEET
N
Dixon Corner
Dixon School
Bishop
Manor
Creek
Hamman
Creek
Carls
Creek
water
188
1 Mile
5000 Feet
Scale 1:20000


(Joins sheet 96)
R. 2 W.
295 000 FEET
170 000 FEET
(Joins sheet 99)
(Joins sheet 101)
(Joins sheet 104)
275 000 FEET
160 000 FEET
T. 7 S.
Fowl River
Muddy Creek
water
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1

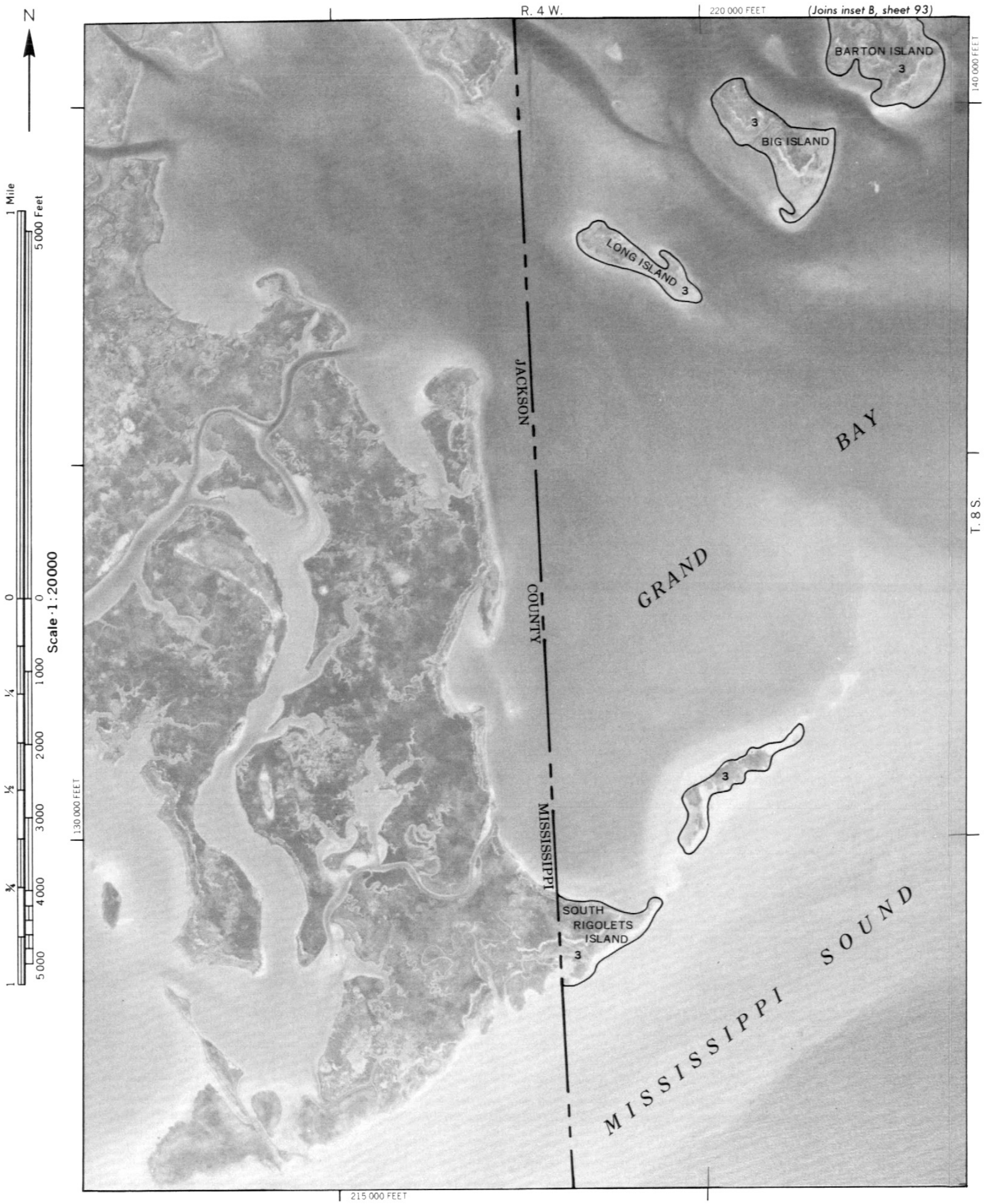

101
N
(Joins sheet 97)
300 000 FEET
R. 2 W.
R. 1 W.
T. 7 S.
(Joins sheet 100)
(Joins sheet 105)
315 000 FEET
160 000 FEET
120 000 FEET
Dykes Creek
Bayleys Corner
Smithport
GOAT ISLAND
FOWL RIVER POINT
COLD SPRINGS CEMETERY
FOWL RIVER
EAST FOWL RIVER
MOBILE BAY
Mon Louis
Faustinas
BELLINGRATH GARDENS
water
163
1 Mile
5000 Feet
Scale 1:20000

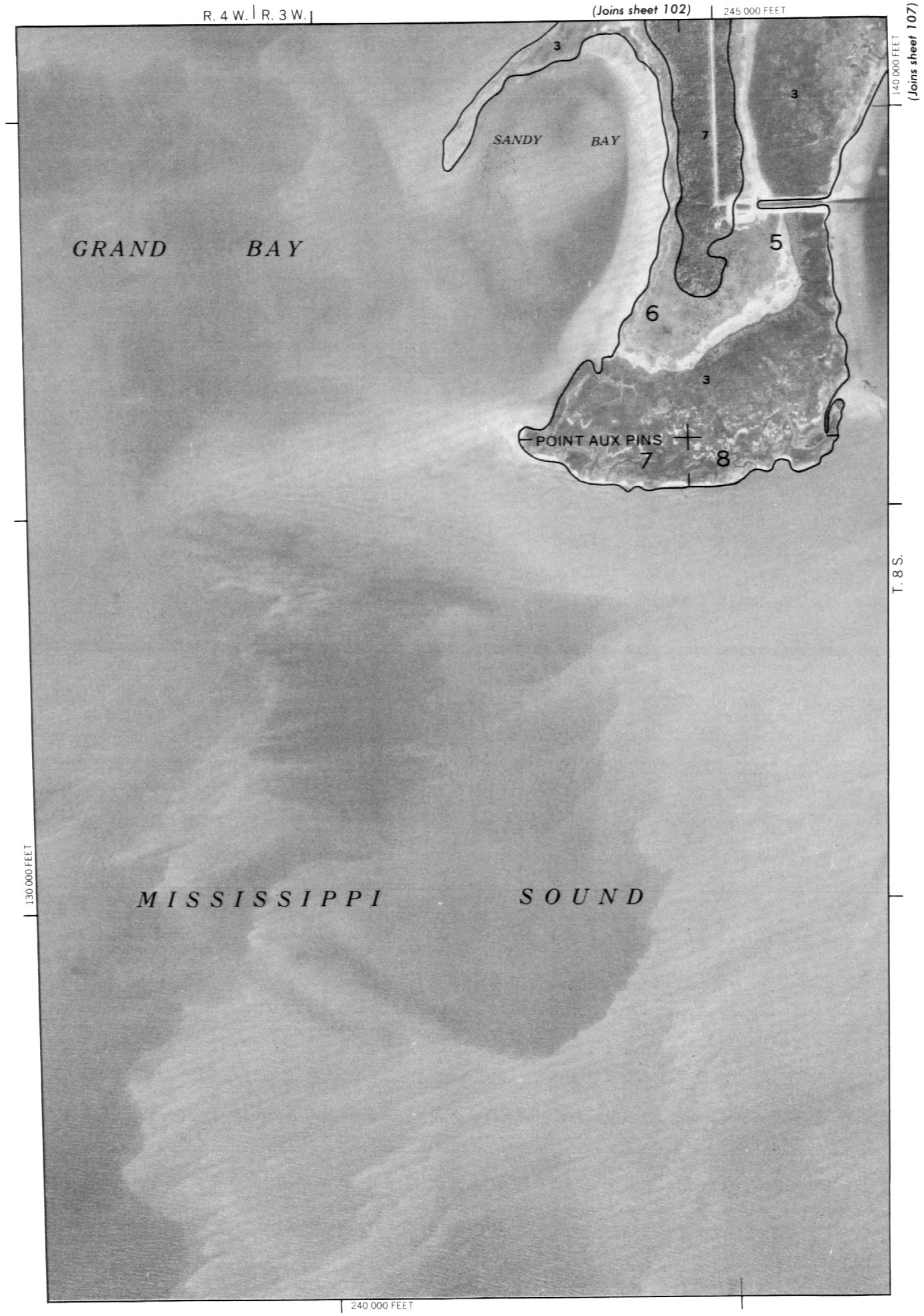

N
(Joins sheet 98)
(Joins sheet 106)
(Joins inset B, sheet 93)
(Joins sheet 103)
R. 4 W. R. 3 W.
T. 7 S.
245 000 FEET
155 000 FEET
145 000 FEET
225 000 FEET
1 Mile
5000 Feet
Scale 1:20000
GRAND BAY SWAMP
GRAND BAY
BAYOU BUBIE
POINT CADDY
BAYOU CADDY
GRAND BAYOU
BULL BAY
BAYOU
BAYOU LA FOURCHE BAY
MARSH ISLAND
LITTLE BAY ISLAND

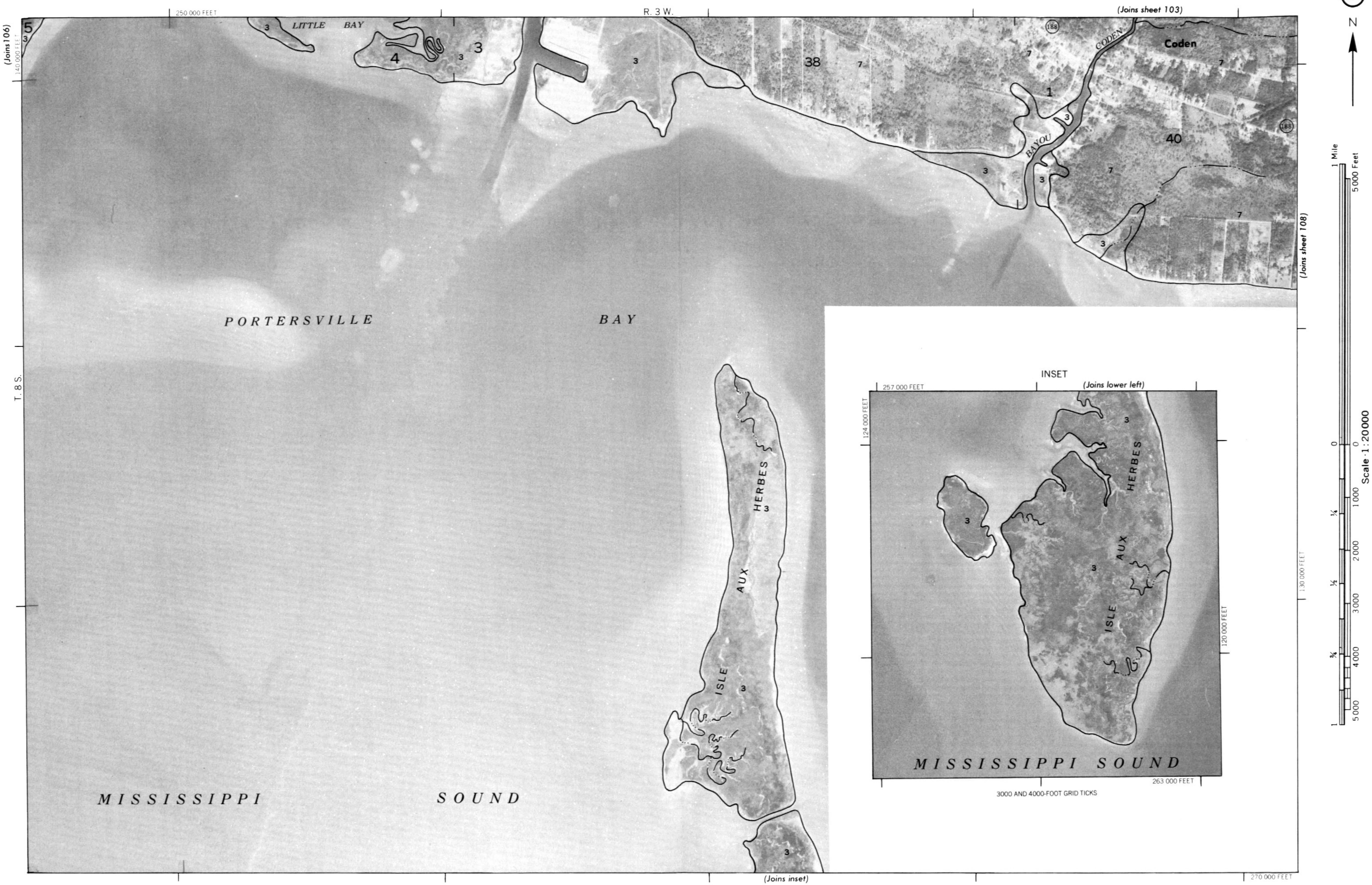

103
N
(Joins sheet 99)
(Joins sheet 104)
(Joins sheet 102)
(Joins sheet 107)
250 000 FEET
270 000 FEET
155 000 FEET
145 000 FEET
R. 3 W.
T. 7 S.
GRAND BAY SWAMP
BAYOU LA BATRE
LITTLE RIVER
LITTLE BAY
Carls Creek
BAYOU CODEN
188
1 Mile
5000 Feet
Scale 1:20000


104
N
(Joins sheet 100)
R. 2 W.
290 000 FEET
155 000 FEET
(Joins sheet 103)
T. 7 S.
(Joins sheet 105)
(Joins sheet 108)
275 000 FEET
145 000 FEET
Delchamps
East Fowl River
Bayou Jonas
Scale 1:20000
1 Mile
5000 Feet
0
¼
½
¾
1000
2000
3000
4000
5000
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35

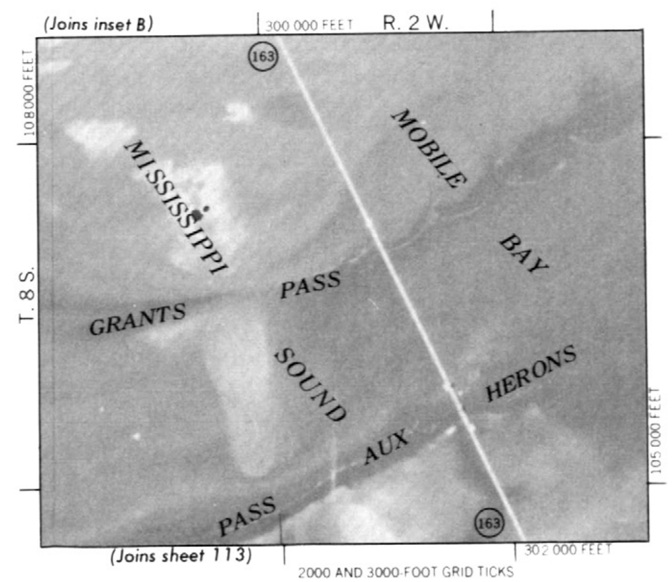

105
N
(Joins sheet 101)
300 000 FEET
R. 2 W.
R. 1 W.
155 000 FEET
(Joins sheet 104)
(Joins sheet 109)
145 000 FEET
315 000 FEET
T. 7 S.
EAST FOWL RIVER
Austin Bayou
ISLAND
LOUIS
MON
Delchamps Bayou
Whitehouse Bayou
The Narrows
water
St. Pauls Church
Delchamps
MOBILE BAY
163
23
24
26
33
35
36
37
19
28
7
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Scale 1:20000


106
N
1 Mile
5000 Feet
Scale 1:20000
R. 4 W.
220 000 FEET
(Joins inset B, sheet 93)
140 000 FEET
130 000 FEET
215 000 FEET
T. 8 S.
BARTON ISLAND
BIG ISLAND
LONG ISLAND
JACKSON COUNTY
MISSISSIPPI
GRAND BAY
SOUTH RIGOLETS ISLAND
MISSISSIPPI SOUND
3

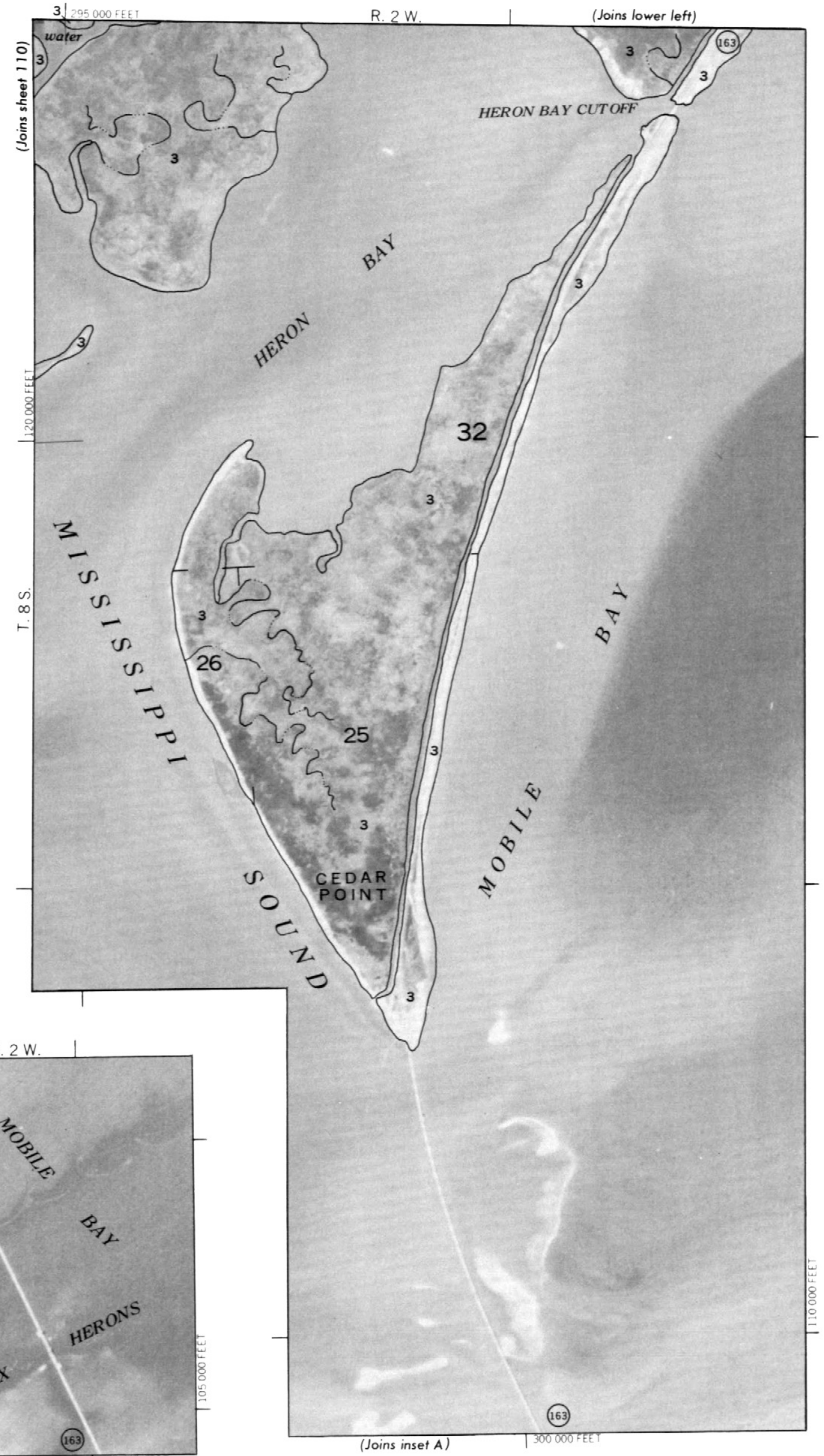

R. 4 W. | R. 3 W.
(Joins sheet 102)
245 000 FEET
140 000 FEET
(Joins sheet 107)
130 000 FEET
240 000 FEET
T. 8 S.
SANDY BAY
GRAND BAY
POINT AUX PINS
MISSISSIPPI SOUND
3
5
6
7
8


107
N
250 000 FEET
R. 3 W.
(Joins sheet 103)
(Joins 106)
140 000 FEET
LITTLE BAY
Coden
CODEN
BAYOU
188
38
40
PORTERSVILLE
BAY
T. 8 S.
(Joins sheet 108)
ISLE
AUX
HERBES
MISSISSIPPI
SOUND
(Joins inset)
270 000 FEET
INSET
(Joins lower left)
257 000 FEET
124 000 FEET
120 000 FEET
130 000 FEET
263 000 FEET
MISSISSIPPI SOUND
3000 AND 4000-FOOT GRID TICKS
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1

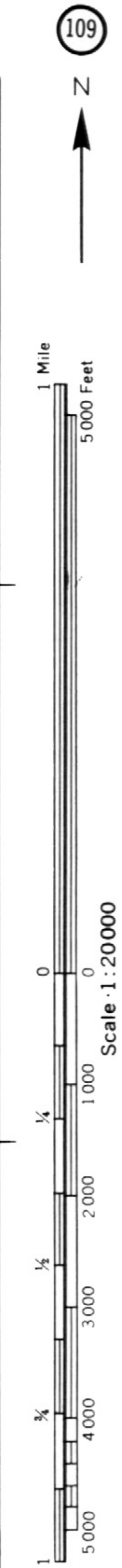

108
N
(Joins sheet 104)
R. 2 W.
290 000 FEET
140 000 FEET
(Joins sheet 107)
(Joins sheet 109)
(Joins sheet 110)
275 000 FEET
125 000 FEET
T. 8 S.
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
1
¼
½
¾
COMO
SULLIVAN
BAYOU
BAYOU
BAYOU
NEGRO
GRAND POINT
PORTERSVILLE
BAY
FOWL
RIVER
BAY
WEST
FOWL
RIVER
MON
LOUIS
ISLAND
HERON
BAYOU
188
188
7
2
28
28
28
28
6
5
4
3
40
7
7
30
8
32
3

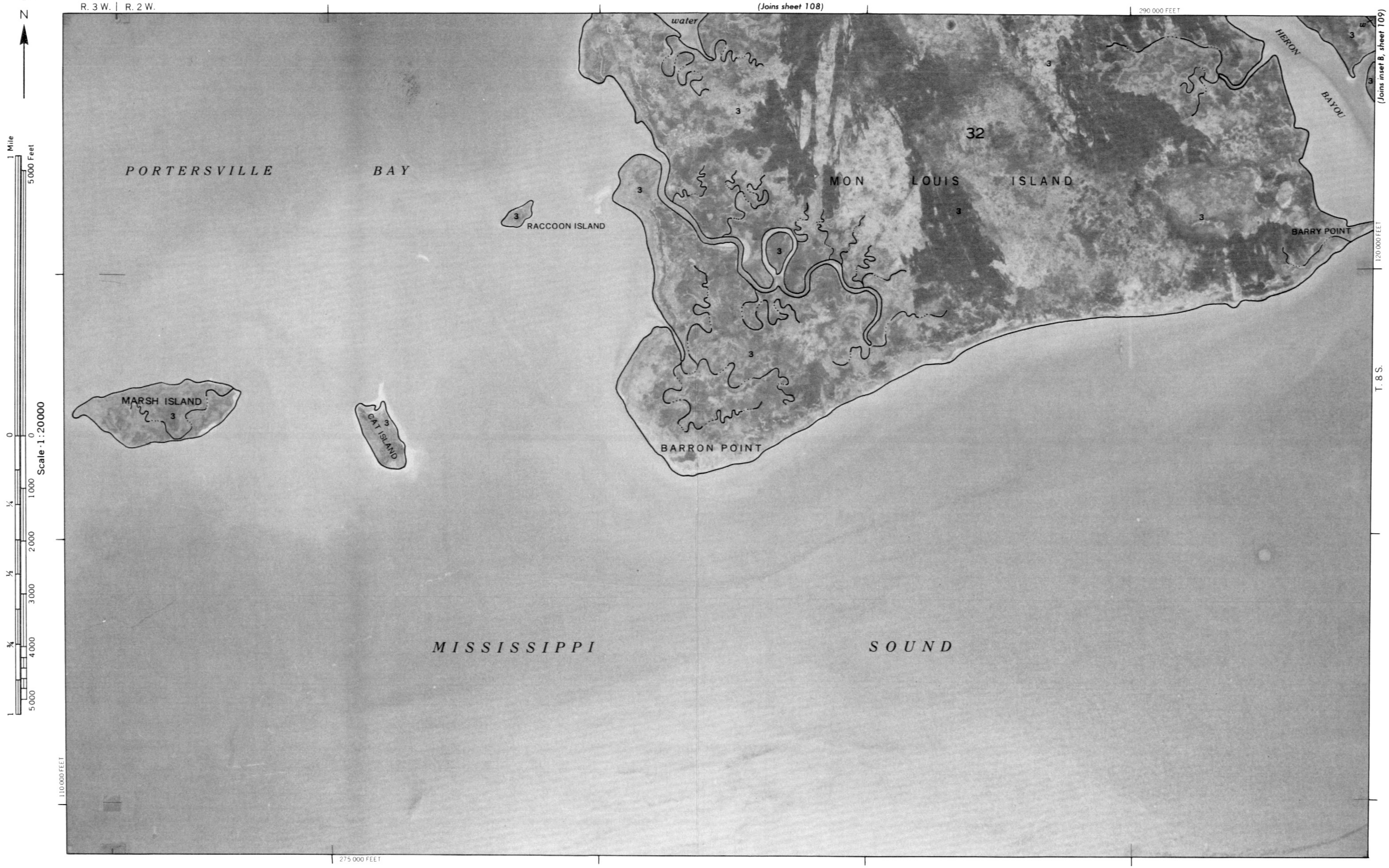


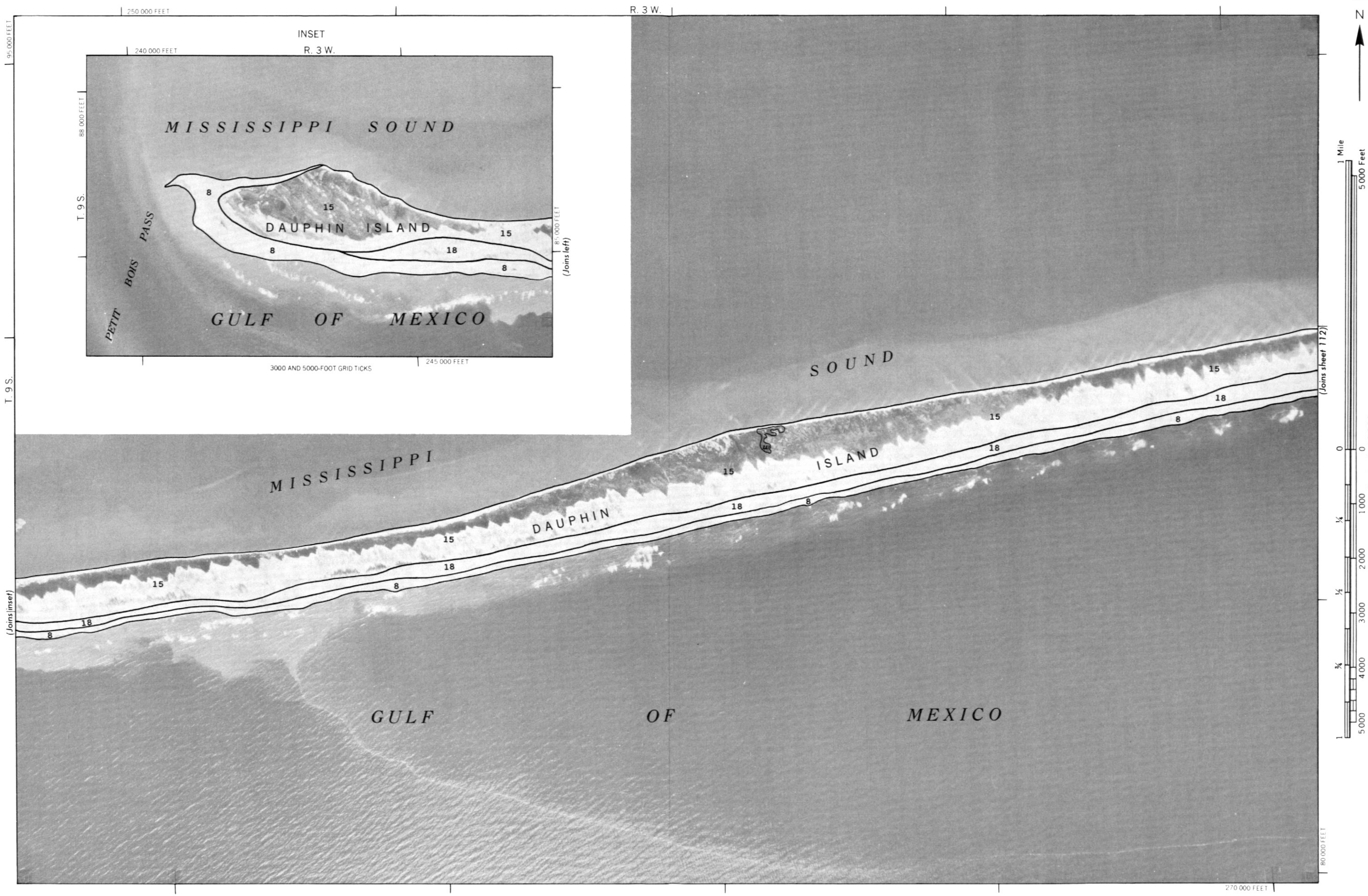
INSET A

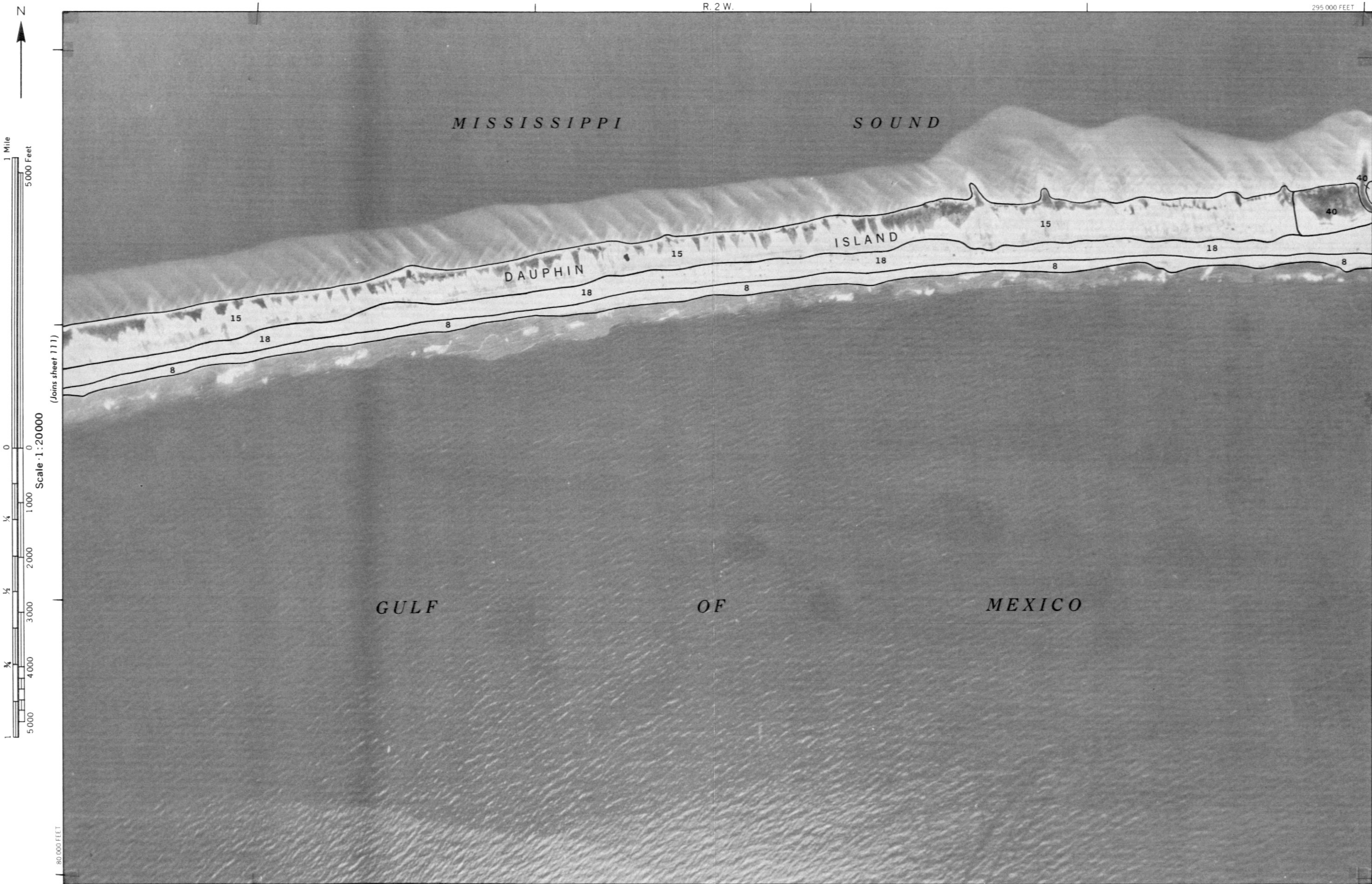


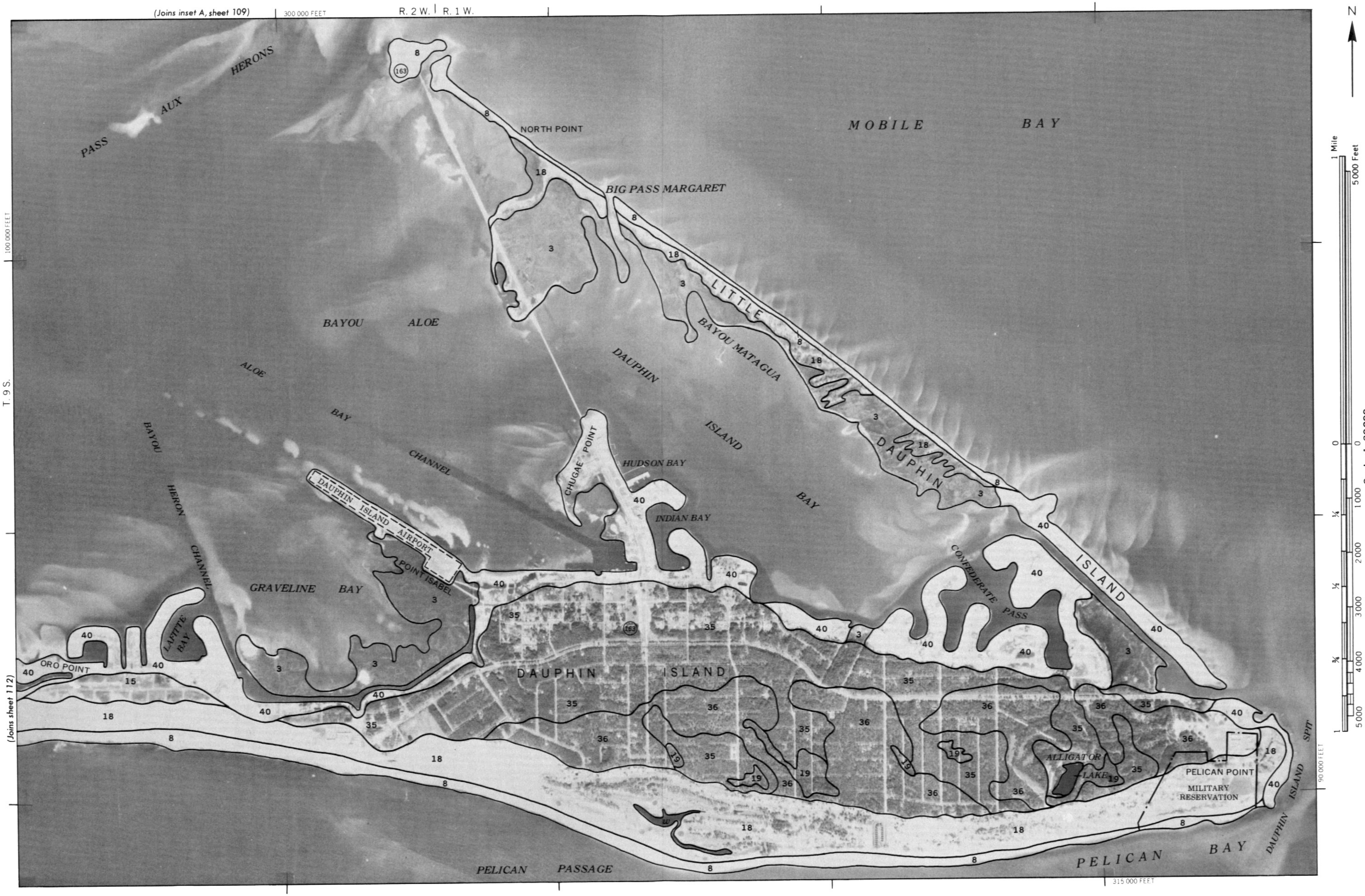
INSET B

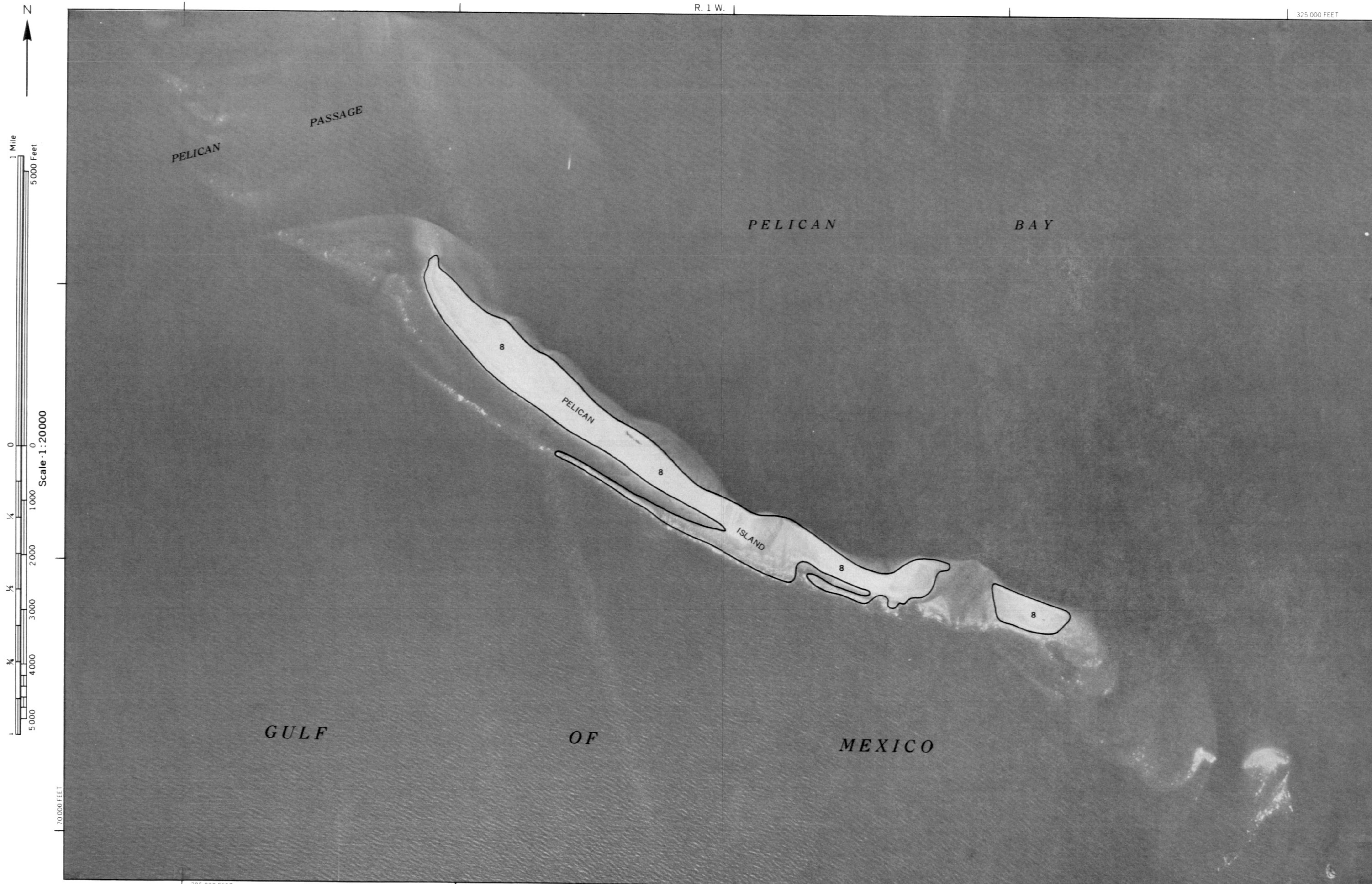



R. 3 W. | R. 2 W.
(Joins sheet 108)
290 000 FEET
(Joins inset B, sheet 109)
water
HERON
BAYOU
32
PORTERSVILLE
BAY
MON LOUIS ISLAND
RACCOON ISLAND
BARRY POINT
120 000 FEET
T. 8 S.
MARSH ISLAND
CAT ISLAND
BARRON POINT
MISSISSIPPI
SOUND
110 000 FEET
275 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000


111
N
INSET
240 000 FEET
R. 3 W.
88 000 FEET
MISSISSIPPI SOUND
T. 9 S.
DAUPHIN ISLAND
PETIT BOIS PASS
GULF OF MEXICO
85 000 FEET
(Joins left)
245 000 FEET
3000 AND 5000-FOOT GRID TICKS
250 000 FEET
R. 3 W.
95 000 FEET
T. 9 S.
MISSISSIPPI SOUND
DAUPHIN ISLAND
GULF OF MEXICO
(Joins inset)
(Joins sheet 112)
80 000 FEET
270 000 FEET
8
15
18
1 Mile
5000 Feet
Scale 1:20000


N
R. 2 W.
295 000 FEET
95 000 FEET
MISSISSIPPI SOUND
DAUPHIN ISLAND
15
18
8
40
(Joins sheet 111)
(Joins sheet 113)
T. 9 S.
GULF OF MEXICO
80 000 FEET
275 000 FEET
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1
Scale 1:20000


(Joins inset A, sheet 109)
300 000 FEET
R. 2 W.
R. 1 W.
N
MOBILE BAY
PASS AUX HERONS
NORTH POINT
BIG PASS MARGARET
LITTLE DAUPHIN ISLAND
BAYOU MATAGUA
BAYOU ALOE
ALOE BAY
DAUPHIN ISLAND BAY
BAYOU HERON CHANNEL
CHANNEL
DAUPHIN ISLAND AIRPORT
CHUGAE POINT
HUDSON BAY
INDIAN BAY
CONFEDERATE PASS
POINT ISABEL
GRAVELINE BAY
LAFITTE BAY
ORO POINT
DAUPHIN ISLAND
ALLIGATOR LAKE
PELICAN POINT
MILITARY RESERVATION
DAUPHIN ISLAND SPIT
PELICAN BAY
PELICAN PASSAGE
(Joins sheet 112)
100 000 FEET
90 000 FEET
315 000 FEET
T. 9 S.
1 Mile
5 000 Feet
Scale 1:20000


N
R. 1 W.
325 000 FEET
80 000 FEET
T. 9 S.
70 000 FEET
305 000 FEET
PELICAN
PASSAGE
PELICAN
BAY
PELICAN
ISLAND
8
8
8
8
GULF
OF
MEXICO
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
0
1000
2000
3000
4000
5000